EXHIBIT 6

Corporate governance and firm value: evidence from the Korean financial crisis ☆

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Abstract

During the 1997 Korean financial crisis, firms with higher ownership concentration by unaffiliated foreign investors experienced a smaller reduction in their share value. Firms that had higher disclosure quality and alternative sources of external financing also suffered less. In contrast, chaebol firms with concentrated ownership by controlling family shareholders experienced a larger drop in the value of their equity. Firms in which the controlling shareholders' voting rights exceeded cash flow rights and those who borrowed more from the main banks also had lower returns. Our results suggest that change in firm value during a crisis is a function of firm-level differences in corporate governance measures.
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1. Introduction

Current research demonstrates the importance of corporate governance in the development of financial markets. La Porta, Lopez-de-Silanes, Shleifer, and Vishny

(1997, 1998, 1999, 2000), hereafter referred to as LLSV, argue that differences among countries in the structure of laws and their enforcement explain the differences in financial market development and also show that such development is promoted by better protection of investors. Moreover, several studies establish a link between corporate governance and corporate valuation. For example, using a sample of firms from nine East Asian countries, Claessens et al. (2002) show that higher cash flow rights of the controlling shareholder are associated with higher market valuation, but higher voting rights correspond to lower market valuation. Johnson, Boone, Breach, and Friedman (2000), hereafter referred to as JBBF, find that the effectiveness of protection for minority shareholders in 25 emerging markets explains more of the variation in exchange rates and stock market performance during the Asian crisis. In a similar vein, LLSV (2002) show that firms in countries with better shareholder protection have higher Tobin's q than those where such protection is weaker.

Although the studies listed above have used cross-country analysis to demonstrate the first-order importance of corporate governance characteristics in determining firm value, few researchers investigate individual countries in depth. One notable exception is Mitton (2002). He uses firm-level data from five East Asian countries to show that several firm-specific measures of corporate governance had a significant effect on performance during the Asian crisis. He argues that corporate governance becomes more critical in explaining cross-firm differences in performance during a financial crisis for two reasons. First, as also argued in JBBF (2000), expropriation of minority shareholders could increase since the incentive for controlling shareholders to do so tends to go up as the expected return on investment falls. Second, the relationship-based financial system in East Asia worked well during the boom period since outside investors did not have full information on whether or not their funds were being deployed appropriately, and the crisis triggered greater investor awareness of weaknesses in corporate governance in the region and led to them pull out (Rajan and Zingales, 1998). Consistent with these arguments, Mitton (2002) finds that firms with higher disclosure quality, greater transparency, higher outside ownership concentration, and corporate focus experienced better stock price performance during the crisis. Lemmon and Lins (2001) also show that during the crisis, firms in which controlling owner-managers owned more of the control rights, but fewer cash flow rights, suffered more loss of share values.

In this study, we test the view of Mitton (2002) that firm-specific measures of corporate governance affect firm performance during a crisis, looking only at Korean companies. Focusing on a single nation in this way allows us to examine corporate governance measures at a level of detail that would be hard to aggregate across countries. In this context, our paper is similar to the work of Joh (2003) who shows that weaker corporate governance in Korean firms is associated with worse accounting performance. However, Joh investigates the relation between corporate governance and firm performance before rather than during the crisis of 1997. The advantage of focusing on the crisis period is that it allows us to examine unambiguously the effect of corporate governance on firm value. In other words, since we use a given set of measures for corporate governance immediately before the

external shock to explain changes in firm value, we can largely eliminate any spurious causality caused by the endogeneity problem.

Korean data have a number of other characteristics that make them particularly suited to our investigation. First of all, many Korean firms belong to business groups known as *chaebols*. Although a great deal of theoretical and empirical research is devoted to understanding the role of business groups in a range of countries, it is not entirely clear whether such entities always perform a valuable function for their shareholders. On the positive side, Khanna and Palepu (2000) compare the profitability of Indian firms belonging to industrial groups to that of independent Indian firms, and find that diversified business groups do add value. Another important finding is that of Shin and Park (1999) who show that because of their internal capital markets, Korean firms belonging to the top 30 business groups are subject to fewer financing constraints than other Korean firms. Hoshi et al. (1991) also examine the sensitivity of Japanese firms' investment expenditures to liquidity and find that it is lower for firms within bank-oriented keiretsu.

On the negative side, however, Johnson, La Porta, Lopez-de-Silanes, and Shleifer (2000) show that controlling shareholders in European business groups have strong incentives to siphon resources out of member firms to increase their individual wealth. Furthermore, according to Bae, Kang, and Kim (2002), although minority shareholders of firms within the top 30 Korean chaebols (hereafter referred to as the chaebol) typically lose out from their acquisitions, the controlling shareholders gain from the same deals. Using a sample of 18,600 Indian firms during the period 1989–1999, Bertrand et al. (2002) also find that the ultimate owners of the Indian pyramids have strong incentives to divert resources from firms low down in the pyramid towards ones high up in the pyramid.

From our perspective, one notable feature of the chaebol is that ownership is heavily concentrated, inasmuch as one individual has almost complete control over all firms within the group. Such a structure gives the owner-managers involved strong incentives to diversify their wealth and human capital (Amihud and Lev, 1981) and to expand their chaebol into several different industries. Despite the significant contribution chaebols have made to the rapid growth of the Korean economy during the last 40 years, critics claim that much of their business expansion has resulted from excessive borrowing and that owner-managers have expropriated other investors by investing the firm's resources to maximize their own or the group's welfare. At the end of 1998, the top 30 chaebols accounted for 11.97% of total GNP, 47.79% of total corporate assets, and 46.54% of total corporate revenues.[1] During the period 1993–1998, the average debt to total assets ratio of listed firms in the top 30 chaebols amounted to 77.18%. In contrast, the ratio of debt to total assets for listed non-chaebol firms was 65.62%. Given that the Korean financial crisis in 1997 led to a loss of investor confidence and the fall in expected returns on investment led to increased expropriation by controlling shareholders (JBBF, 2000), it will be interesting to see whether or not the tendency towards

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[1] See Bae, Kang, and Kim (2002) for a detailed discussion of the importance of the top 30 chaebols in Korea.

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concentration of ownership in chaebol firms has an adverse effect on firm value during the crisis period.

Furthermore, as shown in Claessens et al. (2000), controlling shareholders of chaebols have power over firms that exceeds their cash flow rights. This discrepancy in cash flow rights and voting rights can create severe agency problems between controlling and minority shareholders, since it gives the former group substantial power over important strategic decisions while enabling them to avoid the full cost of any negative outcomes. For the crisis period, we examine whether measures of divergence between cash flow rights and voting rights, as used in LLSV (1999), Claessens et al. (2000), Lemmon and Lins (2001), Mitton (2002), and Joh (2003), are associated with lower market value.

Another important characteristic of ownership structure in Korea is that in many firms institutional investors hold a large proportion of voting rights. Such investors are sometimes affiliated with firms and serve as trading partners, meaning that their stake in the firms is similar to the holding of debt. Although large shareholders who are not affiliated firms (e.g., foreign investors) have strong financial incentives to monitor managerial behavior (Shleifer and Vishny, 1986), affiliated investors might have different monitoring incentives. For example, Barclay and Holderness (1989) and Barclay et al. (1993) argue that large shareholders can extract private benefits that are not available to diffuse stockholders. Furthermore, cross-shareholding practices among firms within the same chaebol can prevent affiliated shareholders from monitoring the member firms effectively, since the controlling shareholders tend to use equity ownership by affiliated firms as a means to secure control of other member firms. We explore the role of different types of investors by separating equity ownership by institutional investors into affiliated and nonaffiliated shareholdings.

Finally, Korean firms have traditionally placed greater reliance on bank financing than companies elsewhere. Although the importance of bank financing in Korea has recently decreased due to financial deregulation and capital market liberalization, Korean firms still rely strongly on bank financing and maintain close financial ties with their main banks (Kang, 1998). A bank-centered corporate governance system is often viewed as having advantages over the capital-market-centered system (Aoki, 1990; Hoshi, et al., 1991; Kaplan, 1994; Kaplan and Minton, 1994; Kang and Shivdasani, 1995). In a bank-centered system, a firm obtains most of its external financing from the main banks, which not only provides both short- and long-term financing but plays the role of a manager of a loan consortium in obtaining financing for its client firms. The main bank also sometimes provides advice to management and intervenes when the firm's profitability is poor. These arguments suggest that the strength of a firm's ties to a main bank will have a positive effect on firm value.

However, bank relations are unlikely to be valuable in circumstances when the banking sector is itself experiencing severe external shocks. If banks are forced to curtail lending because of their own difficulties and firms have no alternative sources of funding, firms have to cut back on investment even when they could invest profitably. An unexpected deterioration in bank durability, therefore, inevitably imposes costs on client firms. According to these arguments, firm value is more likely to fall when a firm has a close relationship with its main bank. Slovin et al. (1993),

Gibson (1995), Kang and Stulz (2000), and Bae, Kang, and Lim (2002) show that when a bank suffers from a decreased ability to lend to a borrower, the client firm is adversely affected.

We find that the economic crisis in Korea has a significant and negative effect on the market value of firms, but with a large cross-sectional variation. Firms with larger equity ownership by foreign investors experience a smaller drop in share value. Firms with higher disclosure quality and those with access to alternative sources of external financing also suffer less from the shock. In contrast, chaebol firms with concentrated ownership by owner-managers and those with concentrated ownership by affiliated firms experience a larger drop in equity value. Firms in which the controlling shareholder's voting rights exceed cash flow rights and those who borrow more from the main banks both have significantly lower returns. We find similar effects for highly diversified firms, those with high leverage, and small and risky firms. We perform several robustness checks on the data, using an alternative estimation period for the change in firm value and alternative definitions of "chaebol" and "main bank," and find that the results are qualitatively unchanged. These findings suggest that firm-level differences in corporate governance measures play an important role in determining changes in firm value during the financial crisis in Korea.

Overall, our results support the findings of Mitton (2002) that corporate governance has a significant influence on firm-level performance in a crisis and further suggest that the negative impact is greater on firms in which controlling shareholders have stronger incentives and means to expropriate resources.

This paper proceeds as follows. Section 2 discusses how changes in firm value caused by economic shock relate to measures of corporate governance. Section 3 describes data and sample characteristics. In Section 4, we show the results of our empirical analysis. Section 5 summarizes and concludes the paper.

2. Corporate governance and firm value: hypotheses

The hypothesis we want to test is that certain corporate governance characteristics play an important role in determining changes in firm value caused by an economic shock. In this section, we discuss several corporate governance measures and other explanatory variables that may be related to such changes.

2.1. Corporate governance variables

Chaebol. In Korea, a large business group is often referred to as a *chaebol*. The Korea Fair Trade Commission (KFTC) defines a business group as "a group of companies of which more than 30% of shares are owned by the group's controlling shareholder and its affiliated companies." Chaebol firms operate in many different industries, are bound together by a nexus of explicit and implicit contracts, and maintain substantial business ties with other firms in their group. They are also characterized by an extensive arrangement of pyramidal or multi-layered share-holding agreements and the existence of cross-debt guarantees among member firms.

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Even though the chaebol's owner-managers put up a relatively small portion of the total stake in the group, they have full control over all member firms, due to the prevalence of reciprocal shareholding agreements and the scarcity of mechanisms to control their discretionary power. Thus, owner-managers can easily expropriate minority investors in the chaebol by investing the firm's resources to maximize their own or the group's wealth, even when such investments do not maximize the value of the individual firm.

A priori, the effect of chaebol affiliation on firm value during an economic crisis is unclear. If it facilitates investment policies that delay the exit of a distressed member firm during the shock period, it could have a detrimental effect on the value of other affiliated firms within the same group but a positive effect on the value of the firm in question. Joh (2003) shows that chaebol firms underperformed relative to independent firms before the crisis. In contrast, if risk-sharing among chaebol firms and the operation of an internal capital market within chaebols allows its members to survive the external shock, the structure of diversified business groups can have a positive effect on the value of their members. To explore this issue, we use a dummy variable that equals one if a firm belongs to one of the 30 largest business groups. Since the top 30 is an arbitrary category created by the Korean government for its own purposes and other smaller chaebols are organized the similar way as the top 30 chaebols, we use the top 50 and the top 70 as alternative definitions of chaebol to test the results.

Ownership structure. Ownership structure is an important factor in determining firm value (Demsetz and Lehn, 1985). According to Jensen and Meckling (1976), concentrated ownership by owner-managers minimizes the agency problem that arises from the separation of ownership and control. Joh (2003) finds that during the 1993–1997 period, Korean firms whose controlling family shareholders had more ownership outperformed those where the family members had less. Mitton (2002) also shows that higher block ownership by the largest shareholder is associated with higher crisis-period stock returns.

However, the effect of ownership concentration on firm value differs between chaebol and non-chaebol firms. For example, substantial discretionary power held by controlling shareholders in chaebol firms can allow them to receive private benefits that do not accrue to other shareholders (Barclay and Holderness, 1989; Johnson, La Porta, Lopez-de-Silanes, and Shleifer, 2000; Bae, Kang, and Kim, 2002). Then such power can have a negative effect on firm value and weaken firms' ability to respond effectively to economic crisis. Furthermore, since chaebol firms often buy and sell goods and services from one another, and because they are connected by an extensive arrangement of reciprocal shareholding agreements, owner-managers of chaebol firms can be more concerned with maximizing group size and/or value than with the situation of an individual member firm. These arguments suggest that chaebol firms where owner-managers own a large concentration of shares will have a more severe agency problem and thus are more likely adversely affected during the crisis. To examine the effect of ownership structure on firm value, we consider three measures of ownership concentration. The first is block holdings by the largest shareholder owning 5% or more of issued shares. The second is the sum of block holdings by all shareholders owning 5% or more of issued shares. The

third is the total ownership by all controlling shareholders, not just blockholders, which is measured by the sum of equity ownership by the owner-manager, equity ownership by his family members, and equity ownership by affiliated firms. To further understand the role of different types of shareholders in determining firm value, we also disaggregate the first two measures of ownership concentration into ownership blocks held by owner-managers and their family members, blocks held by affiliated firms, and blocks held by others. Following Mitton (2002), we also differentiate between ownership blocks held by owners involved with management and blocks held by others.

In addition, we explore in detail the role of nonaffiliated shareholders during the crisis. Korean domestic institutions and foreign investors hold a large proportion of voting rights in many firms. According to Shleifer and Vishny (1986), such outside ownership can provide incentives for shareholders to monitor managerial performance and take actions that enhance firm value. Mitton (2002) shows that firms with higher outside ownership concentration experience significantly better stock price performance. Using data from India, Khanna and Palepu (1999) find that as emerging markets integrate with the global economy, foreign investors serve a valuable monitoring function. To the extent that nonaffiliated domestic and foreign investors play this role, we would expect firms with high ownership by such investors to suffer less in times of crisis. We use equity ownership by domestic and foreign institutions to examine the role of nonaffiliated shareholders.

Disparity between cash flow rights and voting rights. Claessens et al. (2000) show a large divergence between cash flow rights and control rights for many East Asian firms. They show that the widespread use of pyramid ownership structures and cross-holdings among firms allows controlling shareholders to exercise full control over a firm despite holding a relatively small portion of its cash flow rights. Claessens et al. (2002), Lemmon and Lins (2001), Mitton (2002), and LLSV (2002) find that firm value is negatively related to the separation of the cash flow and control rights of the controlling shareholders. Following Claessens et al. (2000), Lemmon and Lins (2001), and Mitton (2002), we measure the cash flow rights of the controlling shareholder as the sum of the direct equity ownership and the product of the ownership stakes obtained indirectly along the chain in a pyramid structure (by tracing up to two layers of control chains). Control rights are taken as the sum of direct equity ownership and the minimum value of ownership in the chain of voting rights. However, unlike previous studies that use data on block holdings to estimate these rights, we use data on both block and total holdings. Data on total holdings allow us to measure the controlling shareholders' rights more accurately. The divergence between cash flow rights and control rights is computed as the ratio of control rights to cash flow rights.

This approach, however, tends to underestimate the actual voting power of controlling shareholders in Korean firms since member firms within chaebols are connected by extensive reciprocal shareholding agreements. It is widely recognized that owner-managers of chaebol firms exercise substantial control over cross-ownership among affiliated firms. Therefore, we use equity ownership by affiliated firms as an additional measure of the divergence between cash flow and control

rights for the controlling shareholder. If owner-managers use equity ownership by affiliated firms to strengthen their control rights with little regard to the wealth of other shareholders, we would expect equity ownership by affiliated firms to have a negative impact on firm value.

Main bank ties. Korean firms have traditionally relied heavily on bank financing, maintaining close and long-term ties with their main banks. The main bank is particularly knowledgeable about the firm's prospects and performs the role of an insurer, because implicit long-term contracts with the firm can create incentives to provide necessary assistance when its client firms are in financial trouble. Therefore, we would expect firms with a close relationship with their main banks to receive strong support when the economy as a whole experiences difficulties. This argument suggests that the strength of a firm's ties to a main bank has a positive effect on firm value. We use the ratio of main bank debt to total debt to measure the strength of a firm's ties to the main bank. We obtain the name of each client-firm's main bank from the *Annual Statistics* published by the Korean Listed Companies Association. Although a firm can borrow from several banks, the *Annual Statistics* lists only one bank as the main bank that provides the main (but not necessary the largest) shares of the firm's debt financing. Alternatively, we define the main bank as the firm's largest lender and obtain this information from annual audit reports. As a broad measure for the bank tie, we also consider the fraction of bank debt to total debt.

However, given that an economic shock adversely affects banks as well as firms, one would expect a more negative effect on firms that maintain close ties to the bank. If banks are forced to curtail lending due to an exogenous shock, their borrowers will have to turn to more expensive sources of external financing and thus lose the benefits of the bank relationship for the future. Kang and Stulz (2000) show that Japanese firms that borrowed more from banks suffered larger reductions in stock prices and cut investments back more substantially from 1990 to 1993, during which the whole banking sector in Japan was experiencing difficulties. Further, Bae, Kang, and Lim (2002) show that Korean firms with high bank loan ratios experience a large drop in the value of their equity when their main banks experience negative events. They also find that firms with fewer alternative means of external financing suffer more from the adverse shocks to banks.

According to this argument, firm value is more likely to fall when a firm borrows more from banks. It also suggests that firms that can raise capital from external markets will experience a smaller drop in share value, since these firms have access to alternative sources of financing when their main banks are in financial distress. To examine the possible substitution effect of bank financing, we use a dummy variable that takes the value of one if the firm has an American Depositary Receipt (ADR) listed in the United States. LLSV (1998) and JBBF (2000) argue that the accounting standard is an important element of corporate governance and Mitton (2002) suggests that firms with a listed ADR have higher disclosure quality. Reese and Weisbach (2002) also argue that one reason why non-US firms choose to cross-list in the US is the protection of minority shareholder rights associated with Securities and Exchange Commission (SEC) registration. Therefore, another reason for using an

ADR dummy in our analysis is to examine whether or not increasing transparency leads to better stock price performance during the crisis.

Corporate diversification. Mitton (2002) argues that diversified firms suffer more loss of value during a crisis than focused firms since expropriation of minority shareholders is likely to be more severe. Lins and Servaes (2002) also argue that the severe market imperfections found in emerging markets increase the potential agency costs associated with diversification and that greater asymmetric information allows management and large shareholders to exploit minority shareholders more easily. Consistent with these arguments, Lins and Servaes find that diversified firms from East Asian markets trade at a discount of approximately 7% compared to single-segment firms. Fauver et al. (2003), however, show that the value of diversification is negatively related to the level of capital market development and international integration.

Following Mitton (2002), we use three measures of diversification in this paper. The first variable is a dummy variable that is equal to zero if 90% or more of a firm's sales come from one three-digit SIC.[2] The second variable is the number of industries in which the firm operates. The third variable is the diversity of investment opportunities, similar to that used in Rajan et al. (2000). We identify competing undiversified firms for each segment of diversified firms at a four-digit SIC level and measure the standard deviation of the Tobin's q (book value of debt plus market value of equity/total assets) of matched undiversified firms for all segments of a diversified firm. When there are multiple matched undiversified firms for each segment of a diversified firm, we use the average of their Tobin's q as a measure for the segment's Tobin's q. Diversified firms with standard deviations above (below) the median for all diversified firms are defined as having high (low) variation of investment opportunities.

2.2. Other control variables

Financial investments in affiliated and non-affiliated-firms. Johnson, La Porta, Lopez-de-Silanes, and Shleifer (2000) argue that business groups provide controlling shareholders with an opportunity to transfer wealth to themselves from the firm. Using data from financial investments in affiliated and nonaffiliated firms, Joh (2003) finds that financial investment in nonaffiliated firms raises firm profitability before the crisis, but financial investment in affiliated firms lowers its profitability. These results suggest inefficiency in resource allocation among member firms within the same chaebol and support the tunneling view of Johnson, La Porta, Lopez-de-Silanes, and Shleifer (2000). We measure financial investments in affiliated (nonaffiliated) firms as the ratio of financial securities invested in affiliated (nonaffiliated) firms to the firm's total assets.

Leverage and foreign debt. Lang and Stulz (1992) and Opler and Titman (1994) find that firms that maintain a high leverage ratio and have specialized business lines tend to experience more difficulties during economic downturns. Since highly

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[2] When we use two-digit SIC as in Mitton (2002), we find hardly any diversified firms in our sample.

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leveraged firms would have more difficulty obtaining external financing during a crisis, we would expect such firms to experience a larger drop in equity value.

The financial crisis of Korea in November 1997 can be characterized by a large drop in the value of its currency. The exchange rate at the end of October 1997, approximately one month before Korea sought a rescue package from the International Monetary Fund (IMF), was 902 won per US dollar. By the end of December 1997, the rate had gone up to 1,836 won per dollar, effectively devaluing the won by more than 100%. This sharp fall in the currency price means that firms with a higher fraction of foreign debt in their capital structures suffered more. We calculate the foreign debt ratio as the ratio of borrowings from foreign financial institutions and foreign firms to the total debt.[3] The currency crisis in Korea also suggests that the ability of firms to secure foreign capital should have a positive effect on their market value. We use the ratio of exports to sales to measure this ability.

Liquidity. When firms experience a large economic shock, they can turn to external capital markets and/or internally generated cash flows as well as curtailing new investments. Less financially constrained firms or firms with internal sources of financing should therefore suffer fewer difficulties. As a measure of liquidity, we use the ratio of cash flow to total assets and the ratio of liquid assets to total assets. We compute cash flow as the sum of operating income and depreciation. Liquid assets constitute cash plus marketable securities.

Size. Large firms generally find it easier to secure external finance, are less likely to rely mostly on bank borrowing for their financing, will have smaller informational asymmetries, and are more established than smaller firms. They also tend to have a large asset base that can be used as collateral. All these factors suggest that large firms are less vulnerable to external shock. We measure firm size as the logarithm of total assets.

Risk and performance. Risky firms generally have a high default risk and are therefore more vulnerable to external shock. Similarly, firms with poor past performance are highly likely to suffer from financial difficulties during a crisis and thus are more likely to lose out on growth opportunities in the future. These arguments imply a negative relationship between risk and firm value and a positive association between past performance and value. Risk is measured by beta, which is estimated by the slope of the market model regression. We use one-year daily stock returns during the 1996 period to estimate beta. Past performance is measured by Tobin's *q*.

Finally, we control for other factors such as a firm's market share and the ratio of advertising expenses to total assets.

3. Sample selection and data

Our sample consists of 644 nonfinancial firms listed on the Korean Stock Exchange (KSE) between November 1997 and December 1998. We focus on the

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[3] JBBF (2000) find that the indebtedness of Asian countries is not related to exchange rate depreciation during the crisis of 1997–1998.

period November 1997–1998 for several reasons. Firstly, the Korean government abandoned the defense of the currency on November 18, 1997 to control the financial crisis and sought a rescue package from the IMF on November 22, 1997. Secondly, the stock market index plummeted from 520 just prior to the shock to its lowest point, just above 300, by the end of December 1997. Finally, many Korean firms announced and implemented various restructuring activities intended to combat the crisis during this period.

We obtain the stock price data for the firms from the daily return files of the Korea Investors Service-Stock Market Analysis Tool (KIS-SMAT) and Stock Database of the Korea Securities Research Institute (KSRI), both of which include all firms listed on the KSE. Financial data are obtained from the Listed Company Database of the Korean Listed Companies Association. We identify each firm's chaebol affiliation using the KFTC's *Annual Statistics*.

In Table 1, we present the summary statistics for the entire sample of 644 firms at the end of the fiscal year 1996, which immediately precedes the financial crisis. Panel A of Table 1 summarizes the descriptive statistics for ownership structure and other governance characteristics of the sample firms. We divide the sample firms into chaebol and non-chaebol firms, where chaebol firms are those that belong to any of the top 30 business groups as of the end of fiscal year 1996. Chaebols account for 23% of sampled firms.

The largest blockholder concentration, as measured by the block holdings of the largest shareholder owning 5% or more of issued shares, has a lower mean and median value for chaebol firms than for non-chaebol firms. The further breakdown of the largest blockholder concentration shows that affiliated firms hold a substantial portion of block ownership in chaebol firms, but owner-managers and their families hold a substantial portion of block ownership in non-chaebol firms. The average largest block ownership by owner-managers and their family members in chaebol firms is only 3.9% as opposed to 13.8% in non-chaebol firms. The test of the difference in mean ownership across the two subsamples rejects the null hypotheses of equal ownership. The relatively small block ownership by owner-managers and their family members in chaebol firms is supplemented by the relatively large contribution of affiliated firms. The largest affiliated blockholders hold an average of 12.4% of outstanding equity in chaebol firms. In contrast, these blockholders hold only 4.9% of outstanding equity in non-chaebol firms. These results suggest that cross-shareholding is more prevalent among chaebol than non-chaebol firms. The mean largest blockholder concentration by unaffiliated investors is also larger for chaebol than non-chaebol firms. The medians show a similar pattern.

The finding that the largest blockholders in chaebol firms are not usually owner-managers and their family members is confirmed by the descriptive statistics for the largest managerial blockholder concentration, block holdings by owners involved with management. The average largest managerial blockholder concentration is 4.6% for chaebol firms and 13.2% for non-chaebol firms. This difference is statistically significant at the 0.01 level. In contrast, the largest nonmanagerial blockholder concentration (block holdings by largest shareholders who are not

Table 1

Descriptive statistics of firm characteristics

The sample includes 644 nonfinancial firms listed on the Korean Stock Exchange (KSE) between November 1997 and December 1998. Bank loan data are obtained from firms' annual audit reports and other financial data from the Listed Company Database of the Korean Listed Companies Association. The stock price data are from the daily return files of the Korea Investors Service-Stock Market Analysis Tool and Stock Database of the Korea Securities Research Institute. The summary statistics are the values at the end of fiscal year 1996 except for beta, which is estimated by the slope of the market model regression using one-year daily returns during 1996. Chaebol firms are those belonging to one of the 30 largest business groups in Korea. Largest blockholder concentration denotes block holdings by the largest shareholder who owns 5% or more of issued shares. Largest managerial blockholder concentration refers to block holdings by owners involved with management and largest nonmanagerial blockholder concentration to block holdings by other largest shareholders. Summed blockholder concentration is the sum of block holdings by all shareholders owning 5% or more of issued shares. Total equity ownership by all controlling shareholders is the sum of equity ownerships by controlling families and affiliated firms. Equity ownership by domestic institutional investors denotes ownership by domestic financial institutions and other corporations who are not affiliated with the firm. Cash flow rights of controlling shareholders are the sum of direct equity ownership and the product of the ownership stakes obtained indirectly along the chain of a pyramid structure for controlling shareholders. Voting rights of controlling shareholders are the sum of direct equity ownership and the minimum of the level of ownership in the pyramid structure. The list of main banks is obtained from the Annual Statistics published by the Korean Listed Companies Association. Although a firm can borrow from several banks, the Annual Statistics lists only one as the main bank that provides the major (but not necessary the largest) segment of the firm's financing. Firms are classified as undiversified if 90% or more of sales come from one three-digit SIC. Financial investment in affiliated (nonaffiliated) firms means financial securities invested in affiliated (nonaffiliated) firms. Numbers in brackets denote the medians.

	Total	By chaebol affiliation			
		Chaebol firms	Non-chaebol firms	Test of difference (*p*-value)	
	(*N* = 644)	(*N* = 148)	(*N* = 496)	*t*-test	Wilcoxon *z*-test
Panel A: Ownership structure and other governance characteristics					
Percentage of firms belonging to top 30 chaebols	22.98	100.00	—	—	—
Largest blockholder concentration (%)	18.945	17.811	19.272	0.149	0.078
	[16.92]	[15.84]	[17.13]		
By owner-managers and their family members	11.657	3.937	13.817	0.000	0.000
	[10.73]	[0.00]	[13.07]		
By affiliated firms	6.551	12.362	4.875	0.000	0.000
	[0.00]	[9.34]	[0.00]		
By unaffiliated investors	0.787	1.512	0.579	0.011	0.000
	[0.00]	[0.00]	[0.00]		
Largest managerial blockholder concentration (%)	11.195	4.564	13.175	0.004	0.000

[9.44]	[0.00]	[11.88]		
Largest nonmanagerial blockholder concentration (%)				
11.422	15.511	10.258	0.000	0.000
[8.70]	[12.56]	[7.78]		
Summed blockholder concentration (%)				
30.940	29.482	31.366	0.227	0.093
[29.58]	[28.71]	[29.66]		
By owner-managers and their family members				
17.401	7.010	20.370	0.000	0.000
[15.98]	[0.00]	[18.68]		
By affiliated firms				
9.532	17.082	7.375	0.000	0.000
[0.00]	[15.12]	[0.00]		
By unaffiliated investors				
4.054	5.389	3.620	0.001	0.003
[0.00]	[0.00]	[0.00]		
Total equity ownership by all controlling shareholders (%)				
29.244	26.556	30.024	0.017	0.006
[28.09]	[24.67]	[28.78]		
By owner-managers and their family members				
20.241	9.034	23.497	0.000	0.000
[20.02]	[4.92]	[23.83]		
By affiliated firms				
9.002	17.522	6.527	0.000	0.000
[0.00]	[15.60]	[0.00]		
Total equity ownership by all unaffiliated investors (%)				
32.070	51.374	26.302	0.000	0.000
[29.66]	[52.80]	[24.80]		
By domestic institutional investors				
27.250	44.167	22.195	0.000	0.000
[25.06]	[45.30]	[20.75]		
By foreigners				
4.820	7.206	4.106	0.000	0.000
[1.49]	[4.08]	[1.03]		
Cash flow rights of controlling shareholders: using data on equity ownership by all shareholders (%)				
21.797	11.245	25.152	0.000	0.000
[21.77]	[6.84]	[25.28]		
Voting rights of controlling shareholders: using data on equity ownership by all shareholders (%)				
24.833	17.805	26.695	0.000	0.000
[24.51]	[16.77]	[26.66]		
Voting rights/cash flow rights of controlling shareholders: using data on equity ownership by all shareholders (%)				
3.853	5.831	1.277	0.000	0.000
[1.00]	[1.55]	[1.00]		
Cash flow rights of controlling shareholders: using data on equity ownership by blockholders (%)				
21.023	9.726	24.345	0.000	0.000
[21.23]	[4.98]	[24.89]		
Voting rights of controlling shareholders: using data on equity ownership by blockholders (%)				
21.696	10.757	24.922	0.000	0.000
[21.76]	[4.98]	[25.37]		
Voting rights/cash flow rights of controlling shareholders: using data on equity ownership by blockholders (%)				
1.057	1.222	1.025	0.000	0.026
[1.00]	[1.00]	[1.00]		
Bank loans/total assets				
0.334	0.314	0.340	0.059	0.165
[0.32]	[0.32]	[0.32]		
Loans from main bank/total assets				
0.094	0.047	0.109	0.093	0.000
[0.05]	[0.02]	[0.06]		
Percentage of firms with an ADR				
2.33	8.11	0.60	0.001	—
Percentage of diversified firms				
32.66	36.17	31.57	0.319	—

Table 1. (*Continued*)

| | Total | By chaebol affiliation | | | |
| | | Chaebol firms | Non-chaebol firms | Test of difference (*p*-value) | | |
	(*N* = 644)	(*N* = 148)	(*N* = 496)	*t*-test	Wilcoxon *z*-test
Panel B: Financial characteristics					
Total asset (billion won)	610.834	1642.303	303.056	0.000	0.000
	[156.781]	[776.088]	[113.379]		
Total market value of equity (billion won)	149.002	315.014	99.668	0.000	0.000
	[48.153]	[131.200]	[36.872]		
Total debt/total assets	0.721	0.774	0.705	0.000	0.000
	[0.699]	[0.784]	[0.661]		
Bond debt/total assets	0.206	0.223	0.201	0.137	0.037
	[0.183]	[0.199]	[0.178]		
Foreign debt/total assets	0.074	0.092	0.068	0.027	0.000
	[0.034]	[0.058]	[0.025]		
Cash flow (operating income + depreciation)/total assets	0.052	0.054	0.051	0.450	0.768
	[0.054]	[0.055]	[0.053]		
Net income/total assets	0.000	0.001	−0.001	0.542	0.003
	[0.009]	[0.005]	[0.010]		
Liquid assets (cash + marketable securities)/total assets	0.095	0.055	0.107	0.000	0.768
	[0.069]	[0.034]	[0.084]		
Tobin's *q*	1.099	1.023	1.121	0.005	0.000
	[0.997]	[0.961]	[1.020]		
Beta	0.8521	0.919	0.830	0.002	0.003
	[0.915]	[0.971]	[0.896]		
Exports/sales	0.224	0.258	0.237	0.356	0.267
	[0.176]	[0.213]	[0.163]		
Advertising expenses/sales	0.012	0.008	0.013	0.007	0.027
	[0.002]	[0.003]	[0.001]		
Financial investment to affiliated firms/total assets	0.089	0.095	0.087	0.487	0.161
	[0.047]	[0.059]	[0.044]		
Financial investment to unaffiliated firms/total asset	0.034	0.030	0.043	0.998	0.208
	[0.000]	[0.000]	[0.000]		
Market share in 4-digit industry	0.094	0.179	0.067	0.000	0.000
	[0.034]	[0.089]	[0.023]		

associated with management) averages at 15.5% for chaebol firms and 10.3% for non-chaebol firms. This difference is also significant at the 0.01 level.

When we measure the ownership concentration by the sum of block holdings by all shareholders who own 5% or more of issued shares (summed blockholder concentration), we again find the results that are similar to those using the largest blockholder concentration. These differences in ownership concentration between chaebol and non-chaebol firms become much stronger when we look at total equity ownership by all controlling shareholders, not just blockholders.

The average total equity ownership by domestic institutional investors not affiliated with the firm is 27.3% for the sample as a whole, being larger for chaebol than non-chaebol firms. Equity ownership by foreign investors across the total sample averages 4.8%. Again, this is larger for chaebol than non-chaebol firms.

When we include data on equity ownership by all shareholders, not just blockholders, the average cash flow rights and voting rights of controlling shareholders for the sample as a whole are 21.8% and 24.8% respectively. As expected, the average ratio of voting rights to cash flow rights is significantly higher for chaebol than non-chaebol firms (5.8 versus 1.3). The fact that the discrepancy is larger in chaebol firms suggests that their controlling shareholders find it easier to engage in expropriation and that such firms have a particularly serious agency problem between controlling and minority shareholders. Cash flow rights and voting rights of controlling shareholders measured using block holdings data show a similar pattern.

For the total sample, the average ratio of bank debt to total assets is 33.4% and the average ratio of main bank debt to total assets is 9.5%. The average ratio of loans from the main bank to total assets for chaebol firms is 4.7% and for non-chaebols is 10.9%. The differences in mean and median ratios are statistically significant, indicating that non-chaebol firms tend to borrow more from their main banks than their chaebol counterparts and that such loans are an important source of their financing.

Sixteen firms in our sample (2.3%) had an ADR listed in the US, of which a disproportionate fraction is chaebol firms. Diversified firms account for 32.7% of the total sample. There is no significant difference in the proportion of diversified firms between the group of chaebol and non-chaebol firms.

Panel B of Table 1 summarizes the financial characteristics of our sample firms. It can be seen that chaebol firms are substantially larger than non-chaebol firms when measured in terms of total asset. The average total asset size of chaebol firms is more than five times that of non-chaebol firms. This difference in firm size is statistically significant at the 0.01 level. The medians show a similar pattern.

Leverage, which we measure by the ratio of total debt to total assets, is also significantly different between the two groups. The mean leverage ratios for chaebol and non-chaebol firms are 77.4% and 70.5%, respectively. For the total sample, the average ratio of bond debt to total assets is 20.6%. The average Korean firm borrows about 7.4% of its total assets from foreign financial institutions and companies. Comparing chaebol to non-chaebol firms, we find that the chaebols use more bond and foreign debt.

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The ratios of cash flow (operating income + depreciation) to total assets for chaebol and non-chaebol firms are on average 5.4% and 5.1% and those of net income to total assets 0.1% and −0.1%, respectively. The average ratios of liquid assets to total asset for chaebol and non-chaebol firms are 5.5% and 10.7%, respectively. Although the mean differences in cash flow and net income ratios between chaebol and non-chaebol firms are not statistically significant, those in liquidity ratios are significant at the 0.01 level.

The performance variable measured by Tobin's q is significantly higher for non-chaebol than chaebol firms. This indicates that on average, non-chaebol firms were outperforming chaebol firms immediately before the financial crisis. The comparison of risk variables reveals that beta is significantly higher for chaebol firms.

The average ratio of exports to sales is 25.8% for chaebol firms and 23.7% for non-chaebols. These differences in export ratios between chaebol and non-chaebol firms are not significant. It is noteworthy that the ratio of exports to sales and the ratio of foreign debt to total assets are positively correlated ($r = 0.3344$), indicating that firms that export more tend to borrow more from overseas financial markets and vice versa.

Across the whole sample, the average level of investment in affiliated firms' financial securities is 8.9% (3.4% for unaffiliated firms' securities). There are no statistically significant differences between chaebol and non-chaebol firms in these two measures.

4. Empirical results

4.1. The effect of external shock on firm value

We use buy-and-hold returns around the event date to gauge the magnitude of the economic shock borne by firms. We set November 18, 1997 as an initial event date, the day on which the IMF proposed the rescue package to Korea to help the financial crisis that had started with a sharp decline of the Korean won against the US dollar earlier that month. We then measure the effect of the shock on firm value by computing the holding period return (HPR) from five days before the event date (November 12, 1997) to 32 days after the event date (December 28, 1997). Specifically, we compute the HPR $(-5, 32)$ as

$$
\begin{aligned}
HPR_i(-5, 32) = {} & (1 + R_{i,-5})(1 + R_{i,-4})(1 + R_{i,-3}) \\
& (1 + R_{i,-2}) \cdots (1 + R_{i,32}) - 1
\end{aligned}
\tag{1}
$$

where $R_{i,t}$ is the daily return of firm i at time t. Different HPRs such as HPR $(-5, 5)$, HPR $(0, 5)$, and HPR (November 1997, October 1998) are also calculated.

We expect that the measurement period of $(-5, 32)$ is long enough to reflect the impact of the external shock on firm value. For example, during this initial shock period, negative events concerning the Korean economy emerged on an almost everyday basis, which had an adverse effect on the value of firms. (See Appendix A for a list of the major events from November 1997 to December 1997.) The Korean won plunged to its lowest level on December 24, 1997, and several financial

institutions and firms went bankrupt during our measurement period, so the effect of adverse shocks was fully incorporated into firms' stock price performance. Therefore, the selected period is likely to provide robust enough information for the assessment of the impact of the crisis on firm value.

We also consider two additional event dates, December 31, 1997 and July 20, 1999. The former is the date when 13 major foreign creditors agreed to roll over Korea's short-term debt and the latter the date on which the Daewoo group, the third largest chaebol in Korea, announced it was defaulting.

Table 2 summarizes the HPRs of our sample of 644 firms around each event date. Panel A of Table 2 shows the HPRs around the initial shock period. The mean and median HPRs $(-5, 32)$ are -52.0% and -56.4%, respectively, both of which are significant at the 0.01 level. The subsample results show that the mean and median HPRs $(-5, 32)$ for chaebol firms are -47.4% and -50.8%, and those for non-chaebol firms -53.3% and -58.0%. Tests for differences in the mean and median HPRs $(-5, 32)$ between chaebol and non-chaebol firms are strongly rejected at the 0.01 level. The mean and median HPRs for other intervals show similar patterns. Our results therefore suggest that chaebol affiliation makes a firm less sensitive to financial crisis.

Panel B of Table 2 shows the HPRs around the time of the default announcement from the Daewoo group. It can be seen that this has a greater adverse effect on the market value of chaebol than non-chaebol firms during short event windows such as $(-5, 5)$ and $(0, 5)$, but that there is no discernible difference during the long event window. The mean and median HPRs $(-5, 5)$ for chaebol firms are -11.2% and -13.1%, and those for non-chaebol firms -5.6% and -10.7%. The differences between the two subgroups are statistically significant. In contrast, the mean and median HPRs $(-5, 30)$ for chaebol firms are -9.9% and -13.5%, showing no significant difference from non-chaebol firms $(-10.9\%$ and $-17.0\%)$.

Panel C of Table 2 shows the HPRs around the time of the roll-over announcement of Korea's debt. The mean and median HPRs $(-5, 30)$ for the total sample are 33.3% and 28.2%, both of which are significant at the 0.01 level. For chaebol firms, the mean HPR is 24.1%, with a median of 18.2%. Both t-tests for the mean as well as the sign-rank tests for the median reject equality from zero at the 0.01 level. For non-chaebol firms, the mean and median HPRs are 35.9% and 30.8%. Equality of HPRs $(-5, 30)$ between chaebol and non-chaebol firms is rejected using both t-tests and Wilcoxon sign-rank tests. These results suggest that the credit roll-over was more favorable for small non-chaebol firms. The mean and median HPRs for other intervals show similar patterns.

In unreported tests, we also check the performance of firms belonging to the top four chaebols (Hyundai, Samsung, LG, and Daewoo) separately around each event date. During the initial shock, firms belonging to the Samsung and LG groups performed better than those belonging to the Daewoo and Hyundai groups, which defaulted on their debts in 1999 and 2000, respectively. The average HPRs $(-5, 32)$ for firms belonging to the Samsung and LG groups are -34.4% and -33.6%, and for those belonging to the Daewoo and Hyundai groups -42.5% and -37.4%. However, the differences in average HPRs between any two of the groups are not

Table 2
Holding period returns (HPRs) around the time of the economic crisis, the Daewoo default announcement, and the roll-over announcement
The sample includes 644 nonfinancial firms listed on the Korean Stock Exchange (KSE) between November 1997 and December 1998. The holding period returns are computed as buy-and-hold returns. November 18, 1997, July 20, 1999, and December 31, 1997 are set as event dates (day 0) for the initial period of crisis, the Daewoo default period, and the roll-over period, respectively. November 18, 1997 is the date when the IMF proposed a rescue package to Korea to help overcome the financial crisis that had started in the middle of that month. July 20, 1999 is the date when the Daewoo group, the third largest chaebol in Korea, announced its default. December 31, 1997 is the date when 13 major foreign creditors agreed to roll over Korea's short-term debt. Chaebol firms are those belonging to one of the 30 largest business groups in Korea. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Around the initial economic shock (Event date: November 18, 1997)

Periods		Total samples ($N = 644$)	By chaebol affiliation			
			Chaebol firms ($N = 148$)	Non-chaebol firms ($N = 496$)	Test of difference (p-value)	
					t-test	Wilcoxon z-test
(−5, 32)	Mean	−51.97%***	−47.39%***	−53.34%***	0.003	0.000
	[Median]	[−56.41%]***	[−50.78%]***	[−57.97%]***		
(−5, 5)	Mean	−20.69%***	−18.21%***	−21.43%***	0.000	0.000
	[Median]	[−21.27%]***	[−19.43%]***	[−21.94%]***		
(0, 5)	Mean	−18.66%***	−15.53%***	−19.73%***	0.000	0.000
	[Median]	[−19.74%]***	[−15.71%]***	[−21.01%]***		
November 1997–October 1998	Mean	−29.16%***	−23.56%***	−31.25%***	0.010	0.013
	[Median]	[−34.64%]***	[−29.18%]***	[−36.07%]***		

Panel B: Around the default announcement of the Daewoo group (Event date: July 20, 1999)

Periods		Total samples (N=619)	Chaebol firms (N=147)	Non-chaebol firms (N=472)	Test of difference (p-value)	
					t-test	Wilcoxon z-test
(−5, 30)	Mean	−10.41%***	−9.86%***	−10.91%***	0.737	0.201
	[Median]	[−16.48%]***	[−13.52%]***	[−17.01%]***		
(−5, 5)	Mean	−6.59%***	−11.21%***	−5.62%***	0.002	0.016
	[Median]	[−11.11%]***	[−13.07%]***	[−10.71%]***		
(0, 5)	Mean	−5.64%***	−8.74%***	−4.84%***	0.000	0.049
	[Median]	[−6.83%]***	[−7.72%]***	[−6.58%]***		

Panel C: Around the roll-over announcement (Event date: December 31, 1997)

Periods		Total samples (N=644)	Chaebol firms (N=148)	Non-chaebol firms (N=496)	Test of difference (p-value)	
					t-test	Wilcoxon z-test
(−5, 30)	Mean	33.26%***	24.07%***	35.94%***	0.002	0.001
	[Median]	[28.21%]***	[18.21%]***	[30.77%]***		
(−5, 5)	Mean	3.92%***	0.99%***	4.77%***	0.065	0.039
	[Median]	[2.50%]***	[0.01%]***	[3.23%]***		
(0, 5)	Mean	16.01%***	12.08%***	17.15%***	0.000	0.000
	[Median]	[16.88%]***	[9.84%]***	[19.01%]***		

significant. At the time of the Daewoo group's default announcement, firms belonging to that group suffered substantially, showing an average HPR $(-5, 30)$ of -67.6%, while those belonging to the Hyundai, Samsung, and LG groups experienced insignificant average HPRs $(-5, 30)$ of -5.7%, 9.1%, and 10.1%. In contrast, it was the Samsung group that performed the best during the roll-over period. The average HPR $(-5,30)$ for its firms is 72.3%. The corresponding HPRs for firms belonging to the Hyundai, LG, and Daewoo groups are 27.2%, 21.9%, and 22.4%. The tests of differences in mean HPRs between the Samsung group and the other three reject the null hypothesis of equal returns.

4.2. The determinants of firm value

To understand the cross-sectional variation in firm returns, we present the estimates from multivariate regressions.

4.2.1. Replication of previous research

Before we move on to a detailed analysis of the effects of corporate governance on firm values, we carry out a replication of previous research. Table 3 replicates the tests performed by Mitton (2002) to determine whether or not his results hold for the large sample of firms used in our study. The dependent variable is the HPR $(-5, 32)$ around the initial shock period and the independent variables are the values at the end of the fiscal year 1996. We also include four industry dummy variables (construction, manufacturing, wholesale and retail, and transportation and services) to control for a possible industry effect in all regressions. To conserve space, the table does not report coefficients on these industry dummies.[4]

In Panel A of Table 3, we use equity ownership by blockholders and disclosure quality of firms as corporate governance measures. In regressions (1), (3), and (5), we regress HPRs $(-5, 32)$ on largest blockholder concentration, summed blockholder concentration, and the ADR dummy, respectively. The results show that the coefficients on these variables are all significant and positive at the 0.01 level, suggesting that firms with higher ownership concentration and higher disclosure quality were less affected by the crisis. These results are consistent with those of Mitton (2002). In regressions (2), (4), and (6), we control for firm size and leverage ratio and find that it does not change the results. The coefficients on the size variable are significant and positive at the 0.01 level, suggesting that large firms are better able to overcome a financial crisis. As expected, the coefficients on the leverage ratio are significant and negative in regressions (2) and (4).

In Panel B of Table 3, we use equity ownership by the largest managerial and nonmanagerial blockholders as proxies for corporate governance. In regressions (1)

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[4] Following Mitton (2002), we do not control for the correlation of the stock return with the market movement. Instead, we control for factors that could affect the stock return by including firm size, leverage, and industry dummies in the regressions. However, since the market performed poorly during a crisis period, one would expect high beta stocks to perform poorly. To make sure that our results are not just driven by the fact that some firms are always more correlated with market movements than others, in Section 4.2.1, we explicitly control for the market risk by including beta in the regressions.

Table 3

OLS regression of the holding period returns (−5, 32) on governance characteristics: Replication of Mitton (2002)

The sample includes 644 nonfinancial firms listed on the Korean Stock Exchange (KSE) between November 1997 and December 1998. The dependent variable is the holding period return (−5, +32). November 18, 1997 is set as an event day (day 0), which is the date when the IMF proposed a rescue package to Korea to help overcome the financial crisis that had started in the middle of that month. Independent variables are the values at the end of the fiscal year 1996. Largest blockholder concentration denotes block holdings by the largest shareholder owning 5% or more of issued shares. Summed blockholder concentration is the sum of block holdings by all shareholders owning 5% or more of issued shares. The ADR dummy takes the value of one if the firm's stock is listed on the US stock exchanges. Largest managerial blockholder concentration refers to block holdings by owners involved with management and largest nonmanagerial blockholder concentration to block holdings by other largest shareholders. Cash flow rights of controlling shareholders are the sum of direct equity ownership and the product of the ownership stakes obtained indirectly along the chain of a pyramid structure for controlling shareholders. Voting rights of controlling shareholders are the sum of direct equity ownership and the minimum of the level of ownership in the pyramid structure. Pyramidal ownership structure dummy takes the value of one if the controlling shareholder controls the firm through indirect as well as direct ownership. Diversification dummy takes the value of zero if 90% or more of a firm's sales come from one three-digit SIC. Number of industries denotes the number of industries in which the firm operates. Firms are classified as having high (low) variation if the standard deviation of the Tobin's q ratios of matched nondiversified firms for all segments of a diversified firm is above (below) the median for all diversified firms. Numbers in parentheses are t-statistics. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Equity ownership by blockholders and disclosure quality

	(1)	(2)	(3)	(4)	(5)	(6)
Intercept	−0.528***	−1.357***	−0.582***	−1.454***	−0.517***	−1.155***
	[−14.93]	[−9.49]	[−16.17]	[−10.31]	[−18.05]	[−7.77]
Largest blockholder concentration	0.236***	0.279***				
	[2.60]	[3.20]				
Summed blockholder concentration			0.324***	0.348***		
			[5.41]	[6.05]		
ADR dummy					0.349***	0.234***
					[5.84]	[3.67]
Log (total assets)		0.047***		0.048***		0.034***
		[6.62]		[7.01]		[4.63]
Total debt/total assets		−0.115***		−0.103***		−0.042
		[−3.22]		[−2.94]		[−1.40]
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.012	0.088	0.047	0.126	0.051	0.082
F-value	2.885	10.713	8.541	15.487	9.590	10.499
Number of sample	601	601	602	602	638	638

Table 3. (*Continued*)

Panel B: Equity ownership by the largest managerial and nonmanagerial blockholders

	(1)	(2)	(3)	(4)	(5)	(6)
Intercept	−0.489***	−1.332***	−0.520***	−1.232***	−0.537***	−1.356***
	[−14.62]	[−8.85]	[−15.68]	[−8.70]	[−15.21]	[−9.12]
Largest managerial blockholder concentration	−0.019	0.098			0.134	0.247***
	[−0.22]	[1.12]			[1.41]	[2.62]
Largest nonmanagerial blockholder concentration			0.308***	0.274***	0.363***	0.366***
			[3.61]	[3.27]	[3.87]	[4.05]
Log (total assets)		0.046***		0.041***		0.046***
		[6.37]		[5.85]		[6.33]
Total debt/total assets		−0.108***		−0.125***		−0.118***
		[−2.97]		[−3.50]		[−3.28]
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.002	0.074	0.023	0.088	0.024	0.097
F-value	1.202	8.945	4.484	10.657	3.990	10.201
Number of sample	600	600	600	600	600	600

Panel C: Cash flow rights and voting rights of controlling shareholders (using data on equity ownership by blockholders)

	(1)	(2)	(3)	(4)	(5)	(6)
Intercept	−1.477***	−1.416***	−0.498***	−1.299***	−0.535***	−1.406***
	[−9.90]	[−9.55]	[−15.77]	[−8.73]	[−13.60]	[−9.60]
Cash-flow rights of controlling shareholder	0.242***					
	[3.90]					
Voting rights of controlling shareholder		0.187***				
		[2.88]				
Voting rights/cash flow rights			−0.001*	−0.001*		
			[−1.78]	[−1.98]		
Pyramidal ownership structure dummy					0.037	0.043
					[1.10]	[1.25]

	(1)	(2)	(3)	(4)	(5)	(6)
Log (total assets)	0.050***	0.047***		0.042***		0.045***
	[6.82]	[6.46]		[5.74]		[6.57]
Total debt/total assets	−0.0418	−0.044		−0.037		−0.033
	[−1.29]	[−1.36]		[−1.13]		[−1.06]
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.084	0.074	0.009	0.061	0.002	0.065
F-value	10.282	9.044	2.243	7.221	1.312	8.353
Number of sample	606	606	572	572	638	638

Panel D: Diversification and investment opportunities

	(1)	(2)	(3)	(4)	(5)	(6)
Intercept	−0.474***	−1.252***	−0.451***	−1.181***	−0.474***	−1.275***
	[−15.59]	[−8.92]	[−11.86]	[−8.56]	[−15.58]	[−8.97]
Diversification dummy	−0.055***	−0.057***				
	[−2.74]	[−2.94]				
Number of industries			−0.048***	−0.053***		
			[−3.02]	[−3.43]		
Diversification * high variation					−0.054**	−0.072***
					[−2.28]	[−3.14]
Diversification * low variation					−0.053*	−0.029
					[−1.83]	[−1.02]
Log (total assets)		0.044***		0.043***		0.045***
		[6.58]		[6.29]		[6.48]
Total debt/total assets		−0.117***		−0.133***		−0.122
		[−3.14]		[−3.75]		[−3.61]
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.013	0.091	0.020	0.096	0.012	0.091
F-value	3.002	10.842	4.880	13.401	2.354	9.401
Number of sample	593	593	582	582	591	591

Table 3. (*Continued*)

Panel E: All governance variables combined

	(1)	(2)	(3)	(4)
Intercept	−1.049***	−1.114***	−1.070***	−1.143***
	[−7.01]	[−6.99]	[−7.05]	[−7.09]
ADR dummy	0.226**	0.229***	0.223***	0.225***
	[3.65]	[3.70]	[3.59]	[3.63]
Largest managerial		0.238**		0.237**
blockholder concentration		[2.44]		[2.43]
Largest nonmanagerial		0.295***		0.292***
blockholder concentration		[3.22]		[3.19]
Diversification dummy	−0.055***	−0.049**		
	[−2.86]	[−2.50]		
Diversification * high variation			−0.068***	−0.066***
			[−2.97]	[−2.86]
Diversification * low variation			−0.031	−0.016
			[−1.10]	[−0.56]
Log (total assets)		0.034***	0.034***	0.035***
		[4.34]	[4.55]	[4.48]
Total debt/total assets		−0.112***	−0.119***	−0.113***
		[−3.12]	[−3.55]	[−3.16]
Industry dummies	Yes	Yes	Yes	Yes
Adjusted R^2	0.109	0.121	0.109	0.121
F-value	11.391	9.632	10.010	8.795
Number of sample	593	566	591	564

and (2), the coefficients on largest managerial blockholder concentration are shown to be insignificant, while in regressions (3) and (4), those on largest nonmanagerial blockholder concentration emerge as significant and positive at the 0.01 level. When we include both the largest managerial and nonmanagerial blockholder concentrations in regression (5), the coefficient on largest managerial blockholder concentration is again not significant, but that on largest nonmanagerial blockholder concentration is significant and positive at the 0.01 level. These results confirm the work of Mitton (2002) and indicate that the presence of largest blockholders that are not involved with management can reduce the agency problem between controlling and small shareholders during a crisis. However, the coefficients on both largest managerial and nonmanagerial blockholder concentrations become significant when we control for firm size and leverage ratio (regression (6)).

Panel C of Table 3 regresses HPRs on cash flow rights and voting rights of controlling block shareholders (regressions (1) and (2)), the ratio of voting rights to cash flow rights (regressions (3) and (4)), and the pyramidal ownership dummy that takes the value of one if owner-managers control the firm through indirect as well as direct ownership (regression (5) and (6)). In regressions (1) and (2), the coefficients on both cash flow rights and voting rights of controlling shareholders are significant and positive at the 0.01 level. However, in regression (3), the coefficient on the ratio of voting rights to cash flow rights, which represents the divergence between the cash flow rights and control rights of controlling shareholders, is significant and negative at the 0.10 level. This result is consistent with the view that the separation of the controlling shareholders' cash flow rights and control rights increases the incentive for expropriation. Controlling for firm size and leverage in regression (4) does not change the significance of the coefficient on the ratio of voting rights to cash flow rights. The coefficients on the pyramidal ownership dummy, however, are not significant in regressions (5) and (6). Overall, these results are consistent with those of Lemmon and Lins (2001), Mitton (2002), and Joh (2003).

In Panel D of Table 3, we regress HPRs on diversification variables. The results show that all three types of diversification measures including diversification dummy (regressions (1) and (2)), number of industries (regressions (3) and (4)), and interaction between diversification dummy and high variation in investment opportunity (regressions (5) and (6)) adversely affect firm value during an economic crisis, again confirming the work of Mitton (2002).

Panel E of Table 3 combines all the corporate governance variables considered in the previous panels. The coefficients on ADR dummy and the largest managerial and nonmanagerial blockholder concentration are significant and positive, while those on diversification measures are significant and negative. In summary, our results are consistent with those of Mitton (2002) and further confirm the importance of corporate governance in determining firm values during an external economic shock.

4.2.2. Extension

To further examine the effect of corporate governance measures, we extend the specifications of Mitton (2002) by considering the unique features of Korean practice. These results are reported in Table 4. In Panel A of Table 4, we

Table 4

OLS regression of the holding period returns (−5, 32) on governance characteristics: Extension of Mitton (2002)

The sample includes 644 nonfinancial firms listed on the Korean Stock Exchange (KSE) between November 1997 and December 1998. The dependent variable is the holding period return (−5, +32). November 18, 1997 is set as an event day (day 0), which is the date when the IMF proposed a rescue package to Korea to help overcome the financial crisis that had started in the middle of that month. Independent variables are the values at the end of the fiscal year 1996. Top 30 chaebol dummy takes the value of one if the firm belongs to one of the largest 30 chaebols. Largest blockholder concentration denotes block holdings by the largest shareholder owning 5% or more of issued shares. Largest managerial blockholder concentration refers to block holdings by owners involved with management and largest nonmanagerial blockholder concentration to block holdings by other largest shareholders. Cash flow rights of controlling shareholders are the sum of direct equity ownership and the product of the ownership stakes obtained indirectly along the chain of a pyramid structure for controlling shareholders. Voting rights of controlling shareholders are the sum of direct equity ownership and the minimum of the level of ownership in the pyramid structure. Pyramidal ownership structure dummy takes the value of one if the controlling shareholder controls the firm through indirect as well as direct ownership. Diversification dummy takes the value of zero if 90% or more of a firm's sales come from one three-digit SIC. Number of industries denotes the number of industries in which the firm operates. Firms are classified as having high (low) variation if the standard deviation of the Tobin's q ratios of matched nondiversified firms for all segments of a diversified firm is above (below) the median for all diversified firms. Numbers in parentheses are t-statistics. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Chaebol affiliation and equity ownership by blockholders

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Intercept	−0.536***	−1.403***	−1.252***	−1.280***	−1.436***	−1.469***	−1.317***	−1.278***	−1.366***
	[−17.42]	[−8.62]	[−8.29]	[−7.59]	[9.44]	[−8.66]	[−7.84]	[−7.82]	[−8.23]
Top 30 chaebol dummy (a)	0.067***	−0.016		0.063		0.048	0.033	0.009	0.084*
	[2.99]	[−0.61]		[1.23]		[0.94]	[1.03]	[0.22]	[1.74]
Largest blockholder concentration by owner-managers and their family members (b)			0.181*	0.241**					
			[1.74]	[2.18]					
Largest blockholder concentration by affiliated firms (c)			0.352***	0.433***					
			[3.72]	[3.90]					
Largest blockholder concentration by unaffiliated investors (d)			0.548**	0.626**					
			[2.09]	[1.97]					
a * b				−0.583*					
				[−1.71]					
a * c				−0.360*					
				[−1.63]					
a * d				−0.481					
				[−0.82]					
Summed blockholder concentration by owner-managers and their family members (e)					0.296***	0.335***			
					[4.09]	[4.34]			

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Summed blockholder concentration by affiliated firms (f)					0.392***	0.471**			
					[5.47]	[5.51]			
Summed blockholder concentration by unaffiliated investors (g)					0.351**	0.306*			
					[2.52]	[1.82]			
a * e						−0.391*			
						[−1.70]			
a * f						−0.276*			
						[−1.73]			
a * g						0.128			
						[0.42]			
Largest managerial blockholder concentration (h)							0.159*		0.324***
							[1.68]		[3.21]
Largest nonmanagerial blockholder Concentration (i)								0.319***	0.445***
								[3.30]	[4.29]
a * h							−0.530*		−0.647**
							[−1.89]		[−2.19]
a * i								−0.162	−0.358*
								[−0.82]	[−1.70]
Log (total assets)		0.048***	0.042***	0.042***	0.045***	0.046**	0.045***	0.044**	0.045***
		[5.70]	[5.65]	[4.90]	[6.08]	[5.33]	[5.27]	[5.15]	[5.31]
Total debt/total assets		−0.043	−0.122***	−0.120***	−0.032*	−0.029*	−0.104***	−0.127***	−0.115***
		[−1.41]	[−3.39]	[−3.31]	[−1.96]	[−1.89]	[−2.83]	[−3.50]	[−3.18]
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.014	0.063	0.093	0.093	0.122	0.112	0.076	0.087	0.101
F-value	3.260	8.146	8.693	6.121	10.370	7.395	7.171	8.100	7.762
Number of sample	638	638	599	599	607	607	600	600	600

Panel B: Chaebol affiliation, equity ownership by all controlling shareholders, and equity ownership by all unaffiliated investors

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Intercept	−0.527***	−1.394***	−1.327***	−1.378***	−1.110***	−1.025***	−1.088***
	[−15.34]	[−9.79]	[−9.06]	[−8.41]	[−7.14]	[−6.67]	[−6.42]
Total equity ownership by all controlling shareholder	0.201***	0.230***					
	[3.01]	[3.69]					
Equity ownership by controlling owner-managers and their family members (a)			0.178***	0.225***			
			[2.61]	[3.01]			

Table 4. (*Continued*)

Equity ownership by affiliated firms (b)		0.317** [4.10]	0.425** [4.38]				
Top 30 chaebol dummy (c)			0.059 [1.19]				−0.052 [−0.85]
c * a			−0.320 [−1.59]				
c * b			−0.299* [−1.82]				
Total equity ownership by all unaffiliated investors				0.172*** [3.29]			
Equity ownership by domestic institutional investors (d)						0.064 [1.14]	0.069 [1.00]
Equity ownership by foreigners (e)						0.791*** [5.98]	0.792** [5.18]
c * d							0.061 [0.46]
c * e							0.003 [0.01]
Log (total assets)		0.048*** [6.90]	0.045*** [6.29]	0.047*** [5.55]	0.029*** [3.54]	0.024*** [2.94]	0.028*** [3.07]
Total debt/total assets		−0.109*** [−3.03]	−0.114*** [−3.17]	−0.114*** [−3.15]	−0.030 [−1.00]	−0.008 [−0.28]	−0.006 [−0.20]
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.018	0.096	0.100	0.102	0.075	0.111	0.108
F-value	3.792	11.804	10.677	7.984	9.620	12.251	8.674
Number of sample	612	612	612	612	634	634	634

Panel C: Chaebol affiliation, cash flow rights, voting rights, and diversification

	(1)	(2)	(3)	(4)	(5)	(6)
Intercept	−1.429*** [−8.54]	−1.411*** [−8.38]	−1.285*** [−7.51]	−1.288*** [−7.82]	−1.188*** [−7.23]	−1.303*** [−7.89]
Cash flow rights of controlling shareholder: using data on equity ownership by all shareholders (a)	0.295*** [4.22]					

	(1)	(2)	(3)	(4)	(5)	(6)
Voting rights of controlling shareholder: using data on equity ownership by all shareholders (b)		0.238*** [3.30]				
Voting rights/cash flow rights of controlling shareholder: using data on equity ownership by all shareholders (c)			−0.002** [−2.39]			
Diversification dummy (d)				−0.063*** [−2.81]		
Number of industries (e)					−0.060*** [−3.23]	
Diversification * high variation (f)						−0.086*** [−3.10]
Diversification * low variation						−0.030 [−1.07]
Top 30 chaebol dummy (g)	0.055 [1.46]	0.060 [1.32]	−0.009 [−0.31]	−0.023 [−0.78]	−0.041 [−0.77]	−0.025 [−0.86]
g * a	−0.283 [−1.60]					
g * b		−0.294* [−1.72]				
g * c			0.002 [1.42]			
g * d				0.026 [0.58]		
g * e					0.023 [0.69]	
g * f						0.046 [0.93]
Log (total asset)	0.046*** [5.36]	0.046*** [5.25]	0.042*** [4.77]	0.047*** [5.54]	0.044*** [5.29]	0.048*** [5.62]
Total debt/total assets	−0.042 [−1.28]	−0.044 [−1.34]	−0.035 [−1.07]	−0.118*** [−3.48]	−0.132*** [−3.70]	−0.123*** [−3.58]
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.085	0.088	0.061	0.089	0.094	0.089
F-value	8.070	7.161	5.670	8.192	9.630	7.433
Number of sample	606	606	572	593	582	591

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disaggregate equity ownership by blockholders into block holdings by owner-managers and their family members, affiliated firms, and unaffiliated investors. We also include a top 30 chaebol dummy variable and interaction variables between the chaebol dummy and the ownership variables. The regression (1) regresses HPRs (−5, 32) around the initial shock period on the chaebol dummy. The estimate on the coefficient of the chaebol dummy is 0.067, which is significant at the 0.01 level. However, the significance of the coefficient on the chaebol dummy disappears when the regression controls for firm size and leverage ratio, as in regression (2).

In regression (3), we add three variables that break down the largest blockholder concentration into block holdings by owner-managers and their family members, affiliated firms, and unaffiliated investors. All of the coefficients on these three variables are significant and positive. In regression (4), we include the interaction terms between the chaebol dummy and the three blockholder concentration variables. The important findings are that the coefficients on the interaction term between the chaebol dummy and the largest blockholder concentration by owner-managers and their family members is −0.583 and for affiliated firms −0.360. Both are significant at the 0.10 level. The same results are obtained when we replace the largest blockholder concentration by the summed blockholder concentration (regressions (5) and (6)). These results suggest that higher equity ownership by insiders or affiliated firms has a greater adverse effect on firm value when the firm belongs to one of the top 30 chaebols.

In regressions (7)–(9), we use the largest managerial and nonmanagerial blockholder concentrations as explanatory variables. Again, although these blockholder concentrations have a positive effect on firm value during a crisis, the coefficients on the interaction term between the chaebol dummy and both the largest managerial and nonmanagerial blockholder concentrations are significant and negative.

Overall, our results suggest that the effect of controlling ownership on firm value differs between chaebol and non-chaebol firms and the degree of conflict between controlling and minority shareholders is more severe for firms within chaebols than those outside.

Panel B of Table 4 regresses HPRs (−5, 32) on the chaebol dummy, equity ownership by all controlling shareholders (not just blockholders), their interaction variables, and equity ownership by unaffiliated domestic and foreign institutional investors. Regression (1) shows that higher equity ownership by all controlling shareholders is positively related to firm value. Controlling for firm size and leverage ratio does not change the result (regression (2)). In regression (3), we disaggregate equity ownership by all controlling shareholders into equity ownership by owner-managers and their family members, and equity ownership by affiliated firms. We find that the coefficients on both variables are positive and significant at the 0.05 level or above. In regression (4), we add the chaebol dummy and its interaction terms with two equity ownership variables. The coefficient on the chaebol dummy is not significant, but the coefficient on the interaction term between the chaebol dummy and equity ownership by affiliated firms is negative and significant at the 0.10 level. To the extent that equity ownership by affiliated firms reflects the divergence between

cash flow rights and control rights of the controlling shareholder (Joh, 2003), this result indicates that the owner-managers of firms in the top 30 chaebols use it to strengthen their control rights, and that their influence on affiliated shareholders increases the incentive for expropriation. The coefficient on the interaction term between the chaebol dummy and equity ownership by controlling owner-managers and their family members is also negative, but this is not significant.

In regression (5), we use equity ownership by all unaffiliated investors as an explanatory variable. The coefficient on this variable is significant, with an estimate of 0.172. However, when we break down equity ownership by unaffiliated investors into that controlled by domestic and foreign institutional investors we see that the result is mainly driven by the latter. This indicates that foreign institutional investors serve a more valuable monitoring function than domestic institutional investors (regression (6)). In regression (7), we add the chaebol dummy and its interaction terms with equity ownership by domestic and foreign investors. None of these variables are significant.

Panel C of Table 4 shows the interaction effects between the chaebol dummy and cash flow rights, voting rights of controlling shareholders, and diversification measures. Unlike Mitton (2002), who uses block holdings data to measure the cash flow rights and voting rights of controlling shareholders, we use total holdings data. Regression (1) includes the cash flow rights of controlling shareholders, the chaebol dummy, and their interaction term as explanatory variables. The coefficient on cash flow rights is positive and significant at the 0.01 level, but the coefficients on the chaebol dummy and its interaction term with cash flow rights are not significant. In regression (2), we replace cash flow rights with voting rights. Again, the coefficient on voting rights is positive and significant at the 0.01 level and the coefficient on the chaebol dummy is not significant. However, the interaction term between the chaebol dummy and voting rights is significant and negative at the 0.10 level, suggesting that the more substantial voting rights of controlling shareholders in chaebol firms have an adverse effect on firm value.

Regression (3) uses the ratio of voting rights to cash flow rights. We find that the coefficient on this variable is significant and negative, but the coefficients on the chaebol dummy and its interaction with the ratio of voting rights to cash flow rights are not significant. Regressions (4)–(6) include the chaebol dummy, diversification measures, and interaction terms between these variables. Diversification measures are negatively related to HPRs, but the chaebol dummy and its interaction terms with diversification measures have no statistically discernible effect on HPRs. Firm size and leverage ratio have, respectively, positive and negative effects on firm value, which is consistent with the results in Table 3.

Overall, our results show that chaebol firms with concentrated ownership by controlling shareholders experience a larger drop in the value of their equity during a crisis than those owned mainly by unaffiliated investors. This result suggests that chaebol controlling shareholders' considerable discretionary power has a detrimental effect on firm value during a crisis. In contrast, large outside shareholders, who are less likely to be influenced by owner-managers, discharge a valuable monitoring function that helps to preserve firm value.

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Table 5 shows the effect of the relationship with the main bank on firm value during a crisis. Regression (1) uses the ratio of bank loans to total debt as an explanatory variable. The coefficient on this variable is negative and significant at the 0.05 level. When we add other debt composition and leverage variables, as shown in regression (2), the coefficient is still negative and significant at the 0.01 level, suggesting that close ties with banks before the shock adversely affects the value of client firms. These results support the proposition that client firms are adversely affected when a bank itself suffers from economic shock and is less able to lend. The negative coefficient on the bank loan ratio is consistent with the findings of Kang

Table 5
OLS regression of the holding period returns (−5, 32) on main bank relation
The sample includes 644 nonfinancial firms listed on the Korean Stock Exchange (KSE) between November 1997 and December 1998. The dependent variable is the holding period return (−5, +32). November 18, 1997 is set as an event day (day 0), which is the date when the IMF proposed a rescue package to Korea to help overcome the financial crisis that had started in the middle of that month. Independent variables are the values at the end of the fiscal year 1996. The list of main banks is obtained from the Annual Statistics published by the Korean Listed Companies Association. Although a firm can borrow from several banks, the Annual Statistics lists only one bank as the main bank that provides the major (but not necessary the largest) segment of the firm's financing. The ADR dummy takes the value of one if the firm's stock is listed on the US stock exchanges. Top 30 chaebol dummy takes the value of one if the firm belongs to one of the largest 30 chaebols. Numbers in parentheses are t-statistics. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Intercept	−0.471***	−1.399***	−1.295***	−0.473***	−1.399***	−1.293***
	[−14.11]	[−10.04]	[−7.74]	[−14.12]	[−10.04]	[−7.73]
Bank loans/total debt	−0.093**	−0.136***	−0.138***			
	[−2.23]	[−3.37]	[−3.45]			
Loans from the main bank/ total debt				−0.115**	−0.158***	−0.158***
				[−2.50]	[−3.55]	[−3.59]
Loans from other banks/ total debt				−0.079*	−0.123***	−0.126***
				[−1.82]	[−2.95]	[−3.04]
Bond/total debt		−0.423***	−0.423***		−0.426***	−0.424***
		[−7.96]	[−8.02]		[−8.00]	[−8.05]
Foreign debt/total debt		0.010	0.014		0.008	0.012
		[0.11]	[0.15]		[0.09]	[0.13]
ADR dummy			0.226***			0.225***
			[3.72]			[3.71]
Top 30 chaebol dummy			−0.028			−0.027
			[−1.14]			[−1.09]
Log (total assets)		0.055***	0.050***		0.055***	0.049***
		[7.75]	[5.62]		[7.73]	[5.59]
Total debt/total assets		−0.054*	−0.050*		−0.052*	−0.047*
		[−1.85]	[−1.70]		[−1.75]	[−1.63]
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.008	0.155	0.172	0.008	0.155	0.172
F-value	2.256	15.591	14.263	2.052	14.011	13.073
Number of sample	638	638	638	638	638	638

and Stulz (2000), who show that the performance of Japanese firms that were more dependent on banks was worse than that of less dependent firms during the early 1990s when the banks experienced severe adverse shocks. The coefficients on the leverage ratio and the ratio of bond debt to total debt are also significantly negative.[5] In contrast, the coefficient on the ratio of foreign debt to total debt is not significant. Although it has been argued that the dramatic devaluation of the Korean currency caused financial difficulties for many firms, our evidence suggests that currency collapses have no power to explain changes in firm value.

Overall, our results provide strong support for the hypothesis that an economic shock has a greater negative effect on firm value for financially constrained firms with high leverage, particularly those with close ties to banks. However, the significant devaluation of the Korean won against the US dollar seems to have little effect.

In regression (3) we add the ADR and chaebol dummies. The coefficient on the ADR dummy is significant 0.226 at the 0.01 level. This coefficient suggests that firms listed on both the KSE and the US stock exchanges have higher returns, by about 22.6%, than those listed only on the KSE. It also suggests that managerial transparency and the ability of firms to access to alternative sources of financing are important determinants of firm value during the period of economic crisis. The chaebol dummy, however, is not significant.

To examine the effect of bank loans on firm value more closely, regressions (4)–(6) split the bank loan ratio into two parts: the ratio of the debt from the firm's main bank to total assets and the ratio of the debt from other banks to total assets. The coefficients on both ratios are negative and significant. However, both the magnitude of the estimate and the significance level are larger for the main bank debt, indicating that this is more important in explaining the change in the value of client firms during a crisis. In regression (4), the coefficient on the main bank loan ratio is statistically different from the coefficient on the other bank debt ratio ($F = 3.00$ with a p-value of 0.05).

In Table 6, we include all governance measures used in the previous regressions. In regression (1), we use the summed blockholder concentrations by owner-managers and their family members, affiliated firms, and unaffiliated investors as indicators of ownership concentration. We also include equity ownership by foreigners, diversification measures, leverage and debt composition variables, ADR dummy, and firm size. The coefficients on summed blockholder concentration by owner-managers and their family members, summed blockholder concentration by affiliated firms, equity ownership by foreigners, and ADR dummy are all significant and positive at the 0.01 level. In contrast, the coefficients on diversification measure, leverage ratio, main bank loan ratio, other bank debt ratio, and bond debt ratio are

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[5] As an alternative approach, we investigate the impact of debt composition on firm value by partitioning total debt into short-term and long-term debt. We would expect the leverage effect to be more pronounced if the firm has a higher proportion of short-term debt in its capital structure. This is because firms with more short-term debt are more likely to suffer financial distress if they cannot meet their debt obligation in the near future. We find that the coefficients on both variables are negative and significant at the 0.01 level.

Table 6

OLS regression of the holding period returns (−5, 32) on governance characteristics: All governance variables combined

The sample includes 644 nonfinancial firms listed on the Korean Stock Exchange (KSE) between November 1997 and December 1998. The dependent variable is the holding period return (−5, +32). November 18, 1997 is set as an event day (day 0), which is the date when the IMF proposed a rescue package to Korea to help overcome the financial crisis that had started in the middle of that month. Independent variables are the values at the end of the fiscal year 1996. Summed blockholder concentration is the sum of block holdings by all shareholders owning 5% or more of issued shares. Top 30 chaebol dummy takes the value of one if the firm belongs to one of the largest 30 chaebols. Largest blockholder concentration denotes block holdings by the largest shareholder owning 5% or more of issued shares. Largest managerial blockholder concentration refers to block holdings by owners involved with management and largest nonmanagerial blockholder concentration to block holdings by other largest shareholders. Diversification dummy takes the value of zero if 90% or more of a firm's sales come from one three-digit SIC. Firms are classified as having high (low) variation if the standard deviation of the Tobin's q ratios of matched nondiversified firms for all segments of a diversified firm is above (below) the median for all diversified firms. The list of the main banks is obtained from the Annual Statistics published by the Korean Listed Companies Association. Although a firm can borrow from several banks, the Annual Statistics lists only one as the main bank that provides the major (but not necessarily the largest) segment of financing to the firm. The ADR dummy takes the value of one if the firm's stock is listed on the US stock exchanges. Beta is estimated by the slope of the market model regression, using one-year daily returns during 1996. Financial investment in affiliated (nonaffiliated) firms is financial securities invested in affiliated (nonaffiliated) firms. Numbers in parentheses are t-statistics. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Intercept	−1.105***	−1.229***	−1.071***	1.214***	−1.028***	−1.187***
	[−6.14]	[−5.90]	[−6.08]	[−5.89]	[−5.73]	[−5.69]
Summed blockholder concentration by owner-managers and their family members (a)	0.226***	0.150*				
	[2.98]	[1.74]				
Summed blockholder concentration by affiliated firms (b)	0.273***	0.221**				
	[3.89]	[2.43]				
Summed blockholder concentration by unaffiliated investors (c)	0.173	0.112				
	[1.28]	[0.66]				
Top 30 chaebol dummy (d)		0.088*		0.089*		0.081*
		[1.89]		[1.94]		[1.83]
d * a		−0.383*				
		[−1.78]				
d * b		−0.215				
		[−1.45]				
d * c		−0.257				
		[−0.93]				

	(1)	(2)	(3)	(4)	(5)	(6)
Equity ownership by controlling owner-managers and their family members (e)			0.096 [1.33]	0.023 [0.27]		
Equity ownership by affiliated firms (f)			0.209*** [2.68]	0.130 [1.26]		
d * e				−0.419** [−2.20]		
d * f				−0.290* [−1.86]		
Largest managerial blockholder concentration (g)					0.141 [1.47]	0.127 [1.16]
Largest nonmanagerial blockholder concentration (h)					0.219** [2.49]	0.194* [1.70]
d * g						−0.525* [−1.87]
d * h						−0.269 [−1.37]
Equity ownership by foreigners	0.549*** [4.26]	0.368*** [2.93]	0.578*** [4.54]	0.360*** [2.92]	0.576*** [4.53]	0.375*** [3.07]
Diversification * high variation	−0.045** [−2.06]	−0.043* [−2.01]	−0.046** [−2.06]	−0.046** [−2.18]	−0.050** [−2.26]	−0.047** [−2.19]
Diversification * low variation	−0.011 [−0.41]	−0.029 [−0.97]	−0.009 [−0.32]	−0.034 [−1.18]	−0.012 [−0.45]	−0.032 [−1.09]
Log (total assets)	0.036*** [3.83]	0.046*** [4.28]	0.037*** [3.95]	0.048*** [4.60]	0.034*** [3.59]	0.045*** [4.19]
Total debt/total assets	−0.089** [−2.56]	−0.196*** [−3.57]	−0.089** [−2.51]	−0.208*** [−3.74]	−0.099*** [−2.79]	−0.208*** [−3.74]
Loans from main bank/total debt	−0.099** [−2.13]	−0.104** [−2.29]	−0.095** [−1.98]	−0.096** [−2.11]	−0.100** [−2.14]	−0.099*** [−2.17]
Loans from other banks/total debt	−0.087** [−1.98]	−0.087** [−1.99]	−0.077* [−1.73]	−0.076* [−1.74]	−0.086* [−1.93]	−0.084* [−1.90]
Bond/total debt	−0.344*** [−6.23]	−0.314*** [−5.41]	−0.363*** [−6.57]	−0.340*** [−5.92]	−0.364*** [−6.58]	−0.326*** [−5.65]
Foreign debt/total debt	−0.098 [−1.10]	−0.089 [−0.92]	−0.095 [−1.07]	−0.078 [−0.82]	−0.103 [−1.15]	−0.107 [−1.11]
ADR dummy	0.205*** [3.49]	0.112* [1.91]	0.206*** [3.46]	0.095* [1.82]	0.204*** [3.44]	0.105* [1.77]

Table 6. (*Continued*)

	(1)	(2)	(3)	(4)	(5)	(6)
Cash flow (operating income + depreciation)/total assets		0.674***		0.677***		0.657***
		[3.21]		[3.23]		[3.13]
Liquid assets (cash + marketable securities)/total assets		0.254**		0.206*		0.233*
		[2.12]		[1.72]		[1.94]
Tobin's q		0.053*		0.067**		0.050*
		[1.80]		[2.37]		[1.77]
Beta		−0.112***		−0.133***		−0.112***
		[−3.49]		[−4.10]		[−3.53]
Exports/sales		0.078*		0.062		0.076*
		[1.91]		[1.53]		[1.87]
Advertising expenses/sales		0.458		0.376		0.470
		[1.13]		[0.93]		[1.15]
Financial investment in affiliated firms/total assets		−0.206**		−0.176*		−0.195*
		[−2.16]		[−1.81]		[−1.95]
Financial investment in nonaffiliated firms/total asset		0.008		0.007		−0.003
		[0.08]		[0.06]		[−0.03]
Market share in 4-digit industry		0.059		0.069		0.063
		[0.86]		[1.00]		[0.93]
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.222	0.329	0.210	0.331	0.208	0.325
F-value	10.494	8.490	10.515	9.184	10.202	8.817
Number of sample	565	442	572	447	561	438

significant and negative. These results are generally consistent with those in the previous regressions.

In regression (2), we add the chaebol dummy and its interaction terms with the summed blockholder concentrations. We also control for the other variables discussed in Section 2. The coefficient on the interaction term between the chaebol dummy and the summed blockholder concentrations by owner-managers and their family members is significant −0.383 at the 0.10 level. The coefficient on the interaction term between the chaebol dummy and the summed blockholder concentrations by affiliated firms is −0.215, but this is not significant.

We also find that the coefficients on the ratio of both cash flow and liquid assets to total assets are significant and positive with t-statistics of 3.21 and 2.12, respectively. Therefore, firms that have good liquidity prior to economic shock on average experience a smaller reduction in the market value of their equity during the crisis. The Tobin's q is also positively related to HPRs. This means that firms whose performance was good before the shock experienced a smaller drop in the value of their equity during the crisis. The coefficient on the ratio of export to sales is significant and positive at the 0.10 level. To the extent that firms with more exports have greater access to foreign currency, this result supports the view that high levels of exports help firms overcome the problem of currency devaluation. In contrast, the coefficient on beta is negative and significant at the 0.01 level, supporting the hypothesis that firms with high exposure to economic activity suffer more in the crisis. The ratio of financial investment in affiliated firms to total assets is also negatively related to the HPRs. Given that the close ties between member firms, sustained through financial investments, tend to delay the demise of failing firms and increase the possibility of cross-subsidies and wealth transfers, this result supports the tunneling hypothesis advanced by Johnson, La Porta, Lopez-de-Silanes, and Shleifer (2000). The result is also consistent with that of Joh (2003) who shows that financial investment in affiliated firms lowered the profitability of firms in Korea before the crisis took place.

Regressions (3) and (4) use equity ownership by all controlling owner-managers and their family members and equity ownership by all affiliated firms as indicators of ownership concentration. The coefficients on the interaction variables between the chaebol dummy and these two ownership variables are significant −0.419 and −0.290, respectively, confirming that large controlling ownership in chaebol firms has a negative impact. These results suggest that for chaebol firms, each increase of 10% in equity ownership by controlling family shareholders (affiliated firms) is associated with a lower return of 4.19% (2.90%). Since the average market value of equity for chaebol firms is 315 billion won at the end of the fiscal year 1996 and the average equity ownership by controlling family shareholders (affiliated firms) is 9.03% (17.52%), the average loss to shareholders due to a 9.03% (17.52%) increase in ownership by controlling family shareholders (affiliated firms) would amount to almost 11.92 (16) billion won, which is about 3.78% (5.08%) of the market value. Since the coefficient on the ratio of debt to total asset is −0.208 in regression (4), our results imply that for chaebol firms, a 10% increase in equity ownership by controlling family shareholders (affiliated firms) has a similar negative effect to

increasing the leverage ratio by 20.14% (13.94%). The coefficient on the ratio of loans from main bank to total debt is −0.096 in regression (4), which is significant at the 0.05 level. This coefficient implies that an increase in the main bank loan ratio of 10% leads to a decrease in the holding period returns of 0.96% and that increasing the main bank loan ratio by 10% had a similar effect to increasing the total leverage by about 4.62%. We note that the adjusted *R*-square of regression (4) is 33.1%, suggesting that the regression model fits the data well.

Regressions (5) and (6) replace equity ownership by controlling owner-managers and their family members and equity ownership by all affiliated firms with the largest managerial and nonmanagerial blockholder concentrations. The results obtained are similar to those in regression (2) in as much as the coefficient on the interaction variables between the chaebol dummy and the largest managerial blockholder concentration is significant and negative.

To summarize the results, chaebol firms largely owned by owner-managers and affiliates suffer more in a time of economic crisis. Other vulnerable firms are those heavily dependent on bank financing, particularly main bank financing, and diversified firms. In contrast, chaebol firms mainly owned by foreign-controlled firms experience a smaller drop in value, indicating that the presence of foreign investors is greeted positively by the stock market. Firms with higher disclosure quality and access to alternative means of financing are also more robust. Finally, firms that are small and risky, have a high leverage ratio, and have low cash flow and liquidity realize a large drop in equity value when there is a crisis in the economy.

We conduct a number of tests of the model in order to check the robustness of the results, as reported in Table 7. Regressions (1) and (2) of Panel A change the definition of the main bank to denote the firm's largest lender. The results show that the magnitude of the coefficients on the main bank loan ratio increase further compared to that of the coefficients on the previous regressions in Table 5. The sign and significance of the coefficients on other explanatory variables remains about the same.

Regressions (3) through (6) use alternative definitions of chaebol to show that our results are robust for different characterizations of business groups. Regressions (3) and (4) use the top 50 chaebols as a definition, and regressions (5) and (6) use the top 70.[6] When only the top 50 chaebol or the top 70 chaebol dummy is used without any other explanatory variables (regressions (3) and (5)), the coefficients on both dummies are significant and positive at the 0.01 level. However, they become insignificant once other variables are included (regressions (4) and (6)). Changing the

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[6]To examine the extent to which some Korean firms are independent of chaebol affiliation, Appendix B shows the mean and median numbers of affiliated firms belonging to the top one hundred chaebols as of 1996, 1997, and 1998. In 1998, the mean and median numbers of listed affiliated firms for the top ten chaebols are 9.4 and 8, respectively. The corresponding numbers for the top 61 to 70 (91 to 100) chaebols are only 1.6 (1.2) and 1 (1), respectively. Typically, chaebols outside of the top 60 do not have more than one firm as the listed member. Since 748 firms were listed on the KSE at the end of 1998, and the total number of listed firms belonging to the top one hundred chaebols was 301, it would appear that 59.8% of the firms listed on the KSE belong to other smaller chaebols or are independent. Taken as a whole, Appendix B clearly shows that many Korean firms are, in fact, independent.

Table 7

Robustness checks

The sample includes 644 nonfinancial firms listed on the Korean Stock Exchange (KSE) between November 1997 and December 1998. For Panel A, the dependent variable is the holding period return $(-5, +32)$ in which November 18, 1997 is set as an event date (day 0). For Panel B, the dependent variable is the holding period return from November 1, 1997 to October 31, 1998. Independent variables are the values at the end of the fiscal year 1996. For regressions (1) and (2) of Panel A, the main bank is defined as the firm's largest lender. For other regressions, the list of the main banks is obtained from the Annual Statistics published by the Korean Listed Companies Association. Although a firm can borrow from several banks, the Annual Statistics lists only one as the main bank that provides the major (but not necessary the largest) segment of the firm's financing. Top 30 (50, 70) chaebol dummy takes the value of one if the firm belongs to one of the largest 30 (50, 70) chaebols. Definitions of other variables are the same as those in Table 6.

Panel A: Alternative definitions of main bank (firm's largest lender) and chaebol affiliation (top 50 and top 70 chaebols)

	Main bank relation		Top 50 chaebols		Top 70 chaebols	
	(1)	(2)	(3)	(4)	(5)	(6)
Intercept	−1.381***	−1.174***	−0.537***	−1.171***	−0.542***	−1.052***
	[−9.64]	[−5.67]	[−17.47]	[−5.71]	[−17.64]	[−5.02]
Equity ownership by controlling		0.018		−0.063		−0.091
owner-managers and their family members (a)		[0.21]		[−0.71]		[−1.00]
Equity ownership by affiliated firms (b)		0.122		0.156		0.165
		[1.19]		[1.46]		[1.46]
Top 30 chaebol dummy (c)		0.086*				
		[1.89]				
c * a		−0.423*				
		[−2.22]				
c * b		−0.283*				
		[−1.81]				
Top 50 chaebol dummy (d)			0.064***	0.027		
			[3.10]	[0.59]		
d * a				0.071		
				[0.43]		
d * b				−0.272*		
				[−1.75]		
Top 70 chaebol dummy (e)					0.071***	0.031
					[3.57]	[0.69]
e * a						0.164

Table 7. (*Continued*)

				[1.08]
e * b				−0.265*
				[−1.70]
Equity ownership by foreigners		0.363***	0.314**	0.299**
		[2.95]	[2.55]	[2.44]
Diversification * high variation		−0.049**	−0.048**	−0.047**
		[−2.31]	[−2.22]	[−2.18]
Diversification * low variation		−0.039	−0.040	−0.042
		[−1.32]	[−1.36]	[−1.43]
Log (total assets)	0.054***	0.047***	0.048***	0.041***
	[7.59]	[4.47]	[4.57]	[3.87]
Total debt/total assets	−0.056*	−0.194**	−0.214***	−0.218***
	[−1.88]	[−3.47]	[−3.84]	[−3.95]
Loans from the main bank/total debt	−0.205***	−0.186**	−0.085*	−0.091**
	[−2.83]	[−2.58]	[−1.85]	[−2.01]
Loans from other banks/total debt	−0.172**	−0.167**	−0.070*	−0.077*
	[−2.36]	[−2.29]	[−1.68]	[−1.76]
Bond debt/total debt	0.443***	−0.374***	−0.341***	−0.337***
	[−7.93]	[−6.19]	[−5.97]	[−5.90]
Foreign debt/total debt	0.056	−0.035	−0.093	−0.079
	[0.58]	[−0.35]	[−0.97]	[−0.82]
ADR dummy		0.102*	0.115*	0.125**
		[1.72]	[1.95]	[2.12]
Cash flow (operating income + depreciation)/ total assets		0.649***	0.688***	0.686***
		[3.12]	[3.29]	[3.29]
Liquid assets (cash + marketable securities)/ total assets		0.216*	0.190	0.197*
		[1.80]	[1.58]	[1.65]
Tobin's *q*		0.067**	0.066**	0.064**
		[2.33]	[2.28]	[2.26]
Beta		−0.129***	−0.131***	−0.130***
		[−4.00]	[−4.03]	[−4.03]
Exports/sales		0.077*	0.069*	0.072*
		[1.89]	[1.70]	[1.77]
Advertising expenses/sales		0.421	0.306	0.336

	(1)	(2)	(3)	(4)	(5)	(6)
		[1.02]		[0.75]		[0.83]
Financial investment in affiliated firms/ total assets		−0.180*		−0.181*		−0.179*
		[−1.85]		[−1.87]		[−1.85]
Financial investment in nonaffiliated firms/ total asset		0.014		0.030		0.035
		[0.13]		[0.28]		[0.33]
Market share in 4-digit industry		0.072		0.066		0.072
		[1.05]		[0.97]		[1.05]
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.149	0.334	0.015	0.329	0.020	0.336
F-value	13.452	9.323	3.424	9.131	4.212	9.359
Number of sample	638	572	638	572	638	572

Panel B: Alternative definition of holding period returns (November 1997–October 1998)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Intercept	−0.264***	−0.312***	−0.330**	−1.232***	−1.699***	−0.280***	−1.306***	−1.791***
	[−5.47]	[−7.26]	[−8.30]	[−5.41]	[−8.90]	[−7.08]	[−5.42]	[−6.10]
Equity ownership by controlling owner-managers and their family members (a)	0.043						0.063	0.039
	[0.43]						[0.64]	[0.32]
Equity ownership by affiliated firms (b)	0.249**						0.079	−0.040
	[2.17]						[0.74]	[−0.27]
Top 30 chaebol dummy (c)		0.113***					−0.030	0.116*
		[3.61]					[−0.82]	[1.77]
c * a								−0.736***
								[−2.71]
c * b								−0.170
								[−0.76]
Equity ownership by foreigners			1.485***				0.829***	0.639***
			[8.78]				[4.77]	[3.64]
Diversification * high variation				−0.063**			−0.064**	−0.040
				[−2.86]			[−2.10]	[−1.33]
Diversification * low variation				−0.082**			−0.012	−0.059
				[−1.97]			[−0.31]	[−1.40]
Log (total assets)					0.089***		0.065***	0.080**
					[9.21]		[5.11]	[5.32]

Table 7. (*Continued*)

Total debt/total assets					−0.202***		−0.141***	−0.200***
					[−4.43]		[−2.91]	[−2.52]
Loans from the main bank/ total debt					−0.187***		−0.164**	−0.161**
					[−2.98]		[−2.58]	[−2.50]
Loans from other banks/ total debt					−0.149***		−0.143**	−0.130**
					[−2.50]		[−2.35]	[−2.09]
Bond debt/total debt					−0.540***		−0.498***	−0.469***
					[−7.30]		[−6.59]	[−5.73]
Foreign debt/total debt					0.156		0.111	0.102
					[1.26]		[0.91]	[0.74]
ADR dummy						0.586***	0.324***	0.191**
						[6.96]	[3.89]	[2.26]
Cash flow (operating income + depreciation)/total assets								0.985***
								[3.31]
Liquid assets (cash + marketable securities)/ total assets								0.439**
								[2.57]
Tobin's *q*								0.138***
								[3.38]
Beta								0.075*
								[−1.64]
Exports/sales								0.215***
								[3.70]
Advertising expenses/sales								1.547***
								[2.68]
Financial investment in affiliated firms/total assets								−0.318**
								[−2.30]
Financial investment in nonaffiliated firms/total asset								−0.112
								[−0.73]
Market share in 4-digit industry								0.093
								[0.94]
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.060	0.071	0.160	0.056	0.247	0.122	0.294	0.402
F-value	8.412	12.374	29.323	8.041	22.680	21.775	15.762	12.134
Number of sample	580	596	596	584	596	596	566	447

definition of chaebol does not alter the qualitative impact of the other variables in the model.

In Panel B of Table 7, we change the definition of the initial crisis period from $(-5, 32)$ to (November 1, 1997, October 31, 1998), but use the same explanatory variables as those in Table 6. This analysis arises from the work of Mitton (2002), who measures the crisis-period stock return over a period of one year. Again, we obtain qualitatively identical results, suggesting the measurement period of $(-5, 32)$ used in the previous regressions is robust enough to illustrate the effect of external economic shock on firm value.

4.3. Effects of corporate governance on accounting profitability

Using a sample of 5,829 Korean firms during 1993–1997, Joh (2003) examines how corporate governance measures affected the profitability of firms before the economic crisis. She demonstrates that ownership concentration (measured equity holdings by owner-managers and their family members) has a positive effect on accounting profitability. She also shows that firms with a high disparity between control rights and cash flow rights (measured as equity holdings by affiliated firms) and those with a high ratio of financial investment in affiliated firms to total assets have low profitability. To investigate whether the measures of corporate governance discussed in Joh (2003) explain firm profitability before and during the Korean crisis, Table 8 uses the ratio of net income to total assets as the dependent variable and variables from Table 6 as independent variables. Net income is the value reported for the fiscal year of 1998 and total assets those measured at the end of fiscal year 1997. In unreported tests, we use industry-adjusted ratio of net income to total assets as the dependent variables, and obtain results very similar to those reported using unadjusted ratio.

Regression (1) presents the result for the level of ownership concentration. Equity ownership by controlling owner-managers and their family members is positive and statistically significant at the 0.05 level. This result is consistent with that of Joh (2003). In contrast, the coefficient on equity ownership by affiliated firms is not significant.

Regression (2) examines the effect of chaebol affiliation on firm profitability. Unlike Joh (2003), who finds membership of a chaebol before the crisis to have a strong negative effect, we find that the coefficient on the top 30 chaebol is positive but insignificant. This result suggests that the ability to share risks between member firms and the operation of an internal capital market within a chaebol help firms maintain profitability during an external crisis and partly offset the disadvantages of their governance structures.

Regressions (3) and (4) include equity ownership by foreigners and diversification measures as explanatory variables, respectively. Consistent with our expectation, the coefficient on equity ownership by foreigners is positive and significant at the 0.01 level, but the coefficients on diversification measures are not significant.

Regression (5) includes leverage and debt composition variables. As for the results in Table 5 that use the HPR as the dependent variable, the coefficients on leverage

Table 8
OLS regression of the ratio of net income to total assets on governance characteristics
The sample includes 644 nonfinancial firms listed on the Korean Stock Exchange (KSE) between November 1997 and December 1998. The dependent variable is the ratio of net income to total assets. Net income is the value for the fiscal year of 1998 and total assets are measured at the end of the fiscal year 1997. Definitions of other variables are the same as those in Table 6.

	(1)	(2)	(3)	(4)	(5)	(6)
Intercept	−0.019 [−0.09]	0.259 [1.07]	0.375* [1.70]	0.387** [2.02]	0.243 [1.08]	1.014*** [2.94]
Equity ownership by controlling owner-managers and their family members (a)	0.231** [2.28]					0.102 [0.70]
Equity ownership by affiliated firms (b)	0.058 [0.49]					−0.324* [−1.87]
Top 30 chaebol dummy (c)		0.037 [0.92]				0.054 [0.70]
c * a						0.065 [0.21]
c * b						0.159 [0.61]
Equity ownership by foreigners			0.662*** [3.12]			0.509** [2.28]
Diversification * high variation				−0.005 [−0.16]		−0.005 [−0.13]
Diversification * low variation				−0.045 [−1.12]		−0.087* [−1.71]
Log (total assets)	0.004 [0.36]	−0.009 [−0.69]	−0.017 [−1.49]	−0.014 [−1.47]	0.001 [0.08]	−0.041** [−2.29]
Total debt/total assets	−0.188*** [−3.25]	−0.189*** [−3.37]	−0.149*** [−2.62]	−0.191*** [−3.71]	−0.146*** [−2.63]	−0.269*** [−2.59]
Loans from the main bank/ total debt					−0.393*** [−5.53]	−0.254*** [−3.20]
Loans from other banks/ total debt					−0.333*** [−4.92]	−0.198*** [−2.56]
Bond debt/total debt					−0.428*** [−5.07]	−0.383*** [−3.87]
Foreign debt/total debt					0.188 [1.38]	−0.048 [−0.30]
ADR dummy						0.056 [0.57]
Cash flow (operating income + depreciation)/total assets						0.237 [0.68]
Liquid assets (cash + marketable securities)/total assets						−0.302 [−1.48]
Tobin's q						0.030 [0.63]
Beta						−0.043 [−0.78]
Exports/sales						0.135* [1.95]
Advertising expenses/sales						0.078 [0.12]

Table 8. (*Continued*)

	(1)	(2)	(3)	(4)	(5)	(6)
Financial investment in affiliated firms/total assets						0.032 [0.17]
Financial investment in nonaffiliated firms/total assets						0.080 [0.12]
Market share in 4-digit industry						0.206* [1.79]
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.024	0.015	0.030	0.023	0.086	0.114
F-value	2.964	2.487	3.973	2.841	6.422	3.013
Number of sample	569	575	572	541	575	421

ratio, main bank loan ratio, other bank loan ratio, and bond debt ratio, are negative and significant.

Regression (6) includes all the measures of corporate governance used in the previous regressions and also adds the other variables discussed in Section 2. The coefficient on equity ownership by affiliated firms is now negative and significant at the 0.10 level,[7] which is consistent with Joh (2003). To the extent that this variable measures the disparity between control rights and cash flow rights of controlling shareholders, the findings of both studies suggest that the existence of affiliated shareholders adversely affects firm performance both before and during the economic crisis.

Again, accounting profitability is significantly and positively related to foreign equity ownership but significantly and negatively related to leverage ratio, main bank loan ratio, other bank loan ratio, and bond debt ratio. However, the other corporate governance measures that were significant in Table 6, such as interaction terms between the chaebol dummy and ownership concentration and the ratio of financial investment in affiliated firms to total assets, are not significant here. We would attribute this inconsistency to the weak correlation between net income ratio during 1998 and HPRs (-5, 32) during the initial crisis period. Although the correlation between the two performance variables is positive and significant with a *p*-value of 0.01, its coefficient is only 0.24. This means that while stock price changes at the start of the crisis predict differences in accounting performance later, the relation is not a one-to-one correspondence. Alternatively, an accounting-based measure of performance can be subject to manipulation by corporate managers and

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[7] 1998 was a year when many Korean firms struggled for survival in the aftermath of the Asian crisis. The main concern of controlling owner-managers was to rescue failing affiliates through diverse methods of corporate restructuring and aggressive deals among affiliates, such as financial subsidization and cross-debt guarantees within member firms. Therefore, during this period, the controlling owner-managers of a struggling firm might have strong incentives to use the voting rights of other affiliated firms to delay the exit of their own firm from the group. Although this delay might have a positive effect on its own value, it could have a detrimental effect on the value of other affiliated firms within the same group. The negative effect of equity ownership by affiliated firms on net income during a crisis is consistent with these explanations.

serve to reflect only the short-term profitability of the firm's operations. This would have been particularly true in 1998 since firms will have a strong incentive to manage earnings during an economic crisis. In contrast, stock returns are unaffected by changes in accounting procedures, which enables us to capture the long-term impacts of corporate actions. Finally, unlike accounting profitability measures, stock returns can incorporate the ability of certain governance structures to recover from economic shock. For example, if chaebol firms recover quickly from the initial crisis, and if this information is reflected in stock returns, then, ceteris paribus, chaebol firms will experience a smaller decline in stock returns. Thus, accounting profitability during a crisis might serve as a relatively unreliable proxy for firm performance.

5. Summary and conclusion

In this paper we examine the importance of corporate governance measures in determining firm value during a crisis. Firms with larger equity ownership by foreign investors experience a smaller reduction in their share value. Firms that have higher disclosure quality and alternative sources of external financing also suffer less. In contrast, chaebol firms where ownership is concentrated in owner-managers and/or affiliated firms exhibit a larger drop in equity value. Firms in which the controlling shareholder's voting rights exceed his cash flow rights and those that borrow more from the main banks also have significantly lower returns. We find similar effects for highly diversified firms, those with high leverage, and those that are small and risky. The existence of such systematic evidence on the extent to which firm value is related to several key indicators of corporate governance suggests that differences in governance practice at the firm level play an important role in determining value during a crisis.

Unlike the US, where managers are subject to disciplinary pressures from the capital markets, Korea generally lacks such pressures. To the extent that the incentives for expropriation by controlling shareholders will increase during a financial crisis, the agency problem between controlling and minority shareholders is particularly serious at such times. Under these circumstances, chaebol owner-managers with concentrated ownership have strong incentives to maximize either their own utility or the overall size of the chaebol rather than the value of individual firms. The differences in the valuation effects between chaebol and non-chaebol firms shown in this paper seem largely attributable to these distorted incentives of chaebol owner-managers.

Appendix A. Major events during the Korean financial crisis (November 1997– December 1997)

November 2, 1997   Haetae business group announces its default.
November 6, 1997   Union Bank of Switzerland warns of a possible financial crisis in Korea.

November 18, 1997	IMF proposes the rescue fund to Korea. Korea abandons the defense of its currency. The Korean Stock Price Index plunges below 500.
November 22, 1997	Korean government seeks a rescue package from the IMF to control the financial crisis.
December 6, 1997	Korean government and IMF agree on the terms of the rescue package.
December 7, 1997	Koryo Securities Co. announces its default.
December 9, 1997	Halla business group, Korea's twelfth largest conglomerate, announces its default.
December 10, 1997	Korean government announces the nationalization of the Korea First Bank and the Seoul Bank.
December 11, 1997	Korean government closes five merchant banks.
December 12, 1997	Korean government closes Dongseo Securities Co.
December 13, 1997	Bank of Korea provides special rescue loans to commercial banks and securities companies.
December 23, 1997	Moody's downgrades the sovereign rating of Korea.
December 24, 1997	S&P downgrades the sovereign rating of Korea into Junk bond level. Korean won plunges to over 2,000 per dollar.
December 25, 1997	IMF and G-7 countries make $US 10 billion available to Korea.
December 31, 1997	World's 13 major banks agree to roll over Korea's short-term debt by an additional month.

Appendix B. The number of affiliated firms within the top 100 chaebols

Appendix B presents the mean and median numbers of affiliated firms belonging to the top one hundred chaebols. Numbers in parentheses are the mean and median numbers of listed affiliated firms. Numbers in brackets are the mean and median numbers of all affiliated firms including unlisted firms.

	1996	1997	1998
Top 1–10 chaebols	(9.8; 9)	(9.6; 9)	(9.4; 8)
	[34.3; 31]	[38.7; 31]	[39.6; 32]
Top 11–20 chaebols	(4.5; 5)	(4.7; 4)	(4.7; 6)
	[19.8; 18]	[23.5; 21]	[21.6; 21]
Top 21–30 chaebols	(2.7; 3)	(2.9; 4)	(2.7; 4)
	[15.8; 15]	[20.4; 20]	[19.7; 18]
Top 31–40 chaebols	(2.0; 3)	(2.0; 3)	(2.2; 3)
	[12.6; 10]	[13.4; 12]	[13.8; 12]
Top 41–50 chaebols	(2.5; 2)	(2.5; 3)	(2.6; 3)
	[10.2; 10]	[9.8; 11]	[12.0; 13]
Top 51–60 chaebols	(1.8; 2)	(1.8; 2)	(1.8; 2)
	[9.2; 8]	[10.1; 9]	[11.3; 8]

Appendix B. (*Continued*)

Top 61–70 chaebols	(1.6; 1)	(1.6; 1)	(1.6; 1)
	[8.6; 7]	[9.3; 8]	[11.4; 10]
Top 71–80 chaebols	(1.4; 1)	(1.5; 1)	(1.5; 1)
	[9.0; 8]	[10.1; 10]	[11.2; 8]
Top 81–90 chaebols	(1.5; 1)	(1.5; 1)	(1.6; 1)
	[8.5; 7]	[9.6; 8]	[9.1; 9]
Top 91–100 chaebols	(1.2; 1)	(1.2; 1)	(1.2; 1)
	[8.2; 7]	[9.6; 8]	[9.0; 8]
Total number of listed firms belonging to top 100 chaebols (a)	311	323	301
Total number of firms listed on the Korean Stock Exchange (b)	760	776	748
a/b	40.9%	41.6%	40.2%

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